

# The Mining Journal,

## RAILWAY AND COMMERCIAL GAZETTE

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

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London, Saturday, June 20, 1874.

[WITH SUPPLEMENT.] { PRICE ..... FIVEPENCE. PER ANNUM, BY POST, 21s.

**M**R. JAMES H. CROFTS, STOCK AND SHARE BROKER,  
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BUSINESS in Glaistide Quarry Shares.

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Special Information on OLD TELLER HILL MINE.

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25 Ashton, 22 1/2s. 25 Gawton, 8s. 9d. 25 Richmond, £2 1/2s.  
50 Bog, 21s. 25 Lost Chance, £1 13s 9d. 150 So. Aurora, 10s. 6d. 25 Sweetland Cr., £4 8s.  
25 Bampfylde, £2 16s. 3d. 30 Ladywell, £2 17s. 25 Sweetland Cr., £4 8s.  
40 Birdseye Cr., £3 1/2s. 50 Mark Valley 11s. 3d. 20 So. Carn Brea, £3 9s.  
15 Cape Copper, £2 23/4s. 100 Malpas, 14s. 6d. 100 Tankerville, £9.  
75 Chotan, 14s. 6d. 100 Malabar, 14s. 6d. 100 Tecomia, £1 4s.  
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25 Cashwell, off. wanted. 50 Old Treburtgett, 16s. 50 Utah, £1 9s.  
30 Cedar Creek, £2 4s. 35 Perkins, Beach, 8s. 25 Unit, Mexican, £4 5s.  
100 Cle Hill Coll., 10s. 6d. 100 Plymhill, 7s. 3d. 40 Van, £2 10s.  
2 Carn Brea, £6 3/4s. 75 Prince of Wales, 10s. 3d. 50 Wh. Mary H., £2 1/2s.  
1 Dolcath, £4 7s. 60 Parry's Mountain, 10s. 9d. 50 Penstruthal, 14s. 9d.  
50 Eberhardt, £3 7s. 20 Whitehaven Iron, £4 1/2s.  
100 Emma (Silver), £2 22s. 40 Rockhope, 20s. 75 West Maria, 9s. 6d.  
40 East Van, £1 8s. 9d. 100 Roma (Gold), £1 6s. 50 W. Goldolphin, £2 1/2s.  
50 East Caron, 20s. 6d. 50 Rosewell Hill, 7s. 6d. 20 Wheal Grenville, £5 1/2s.  
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1s. per share on each under £4.

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Bankers: London and Westminster, and City Bank.

The shares worth buying now are—Sweetland, Cape Copper, Tylwyd, Glaistide Quarry, United Bituminous, Cedar Creek, Welsh Freehold, Cardiff and Swansea. Market price forwarded.

Among the Miscellaneous, Brighton Aquarium and Newcastle Chemical should not be overlooked.

SHARES ON OFFER.—The lots will be split to suit purchasers.

10 Chapel House, 30 Cle Hill, 50 West Mostyn Coal.  
10 Wayne's Methyr Coal, 40 Gold Run, 30 East Van.  
40 Whitehaven Iron, 20 Dunraven Adare, 10 Thorpe's Gawber Hall  
12 Littleton Colliery, 10 New Sharston, 50 Tecomia.  
50 Salkstone Fall, 15 Brighton Aquarium.

**M**R. W. WILLIAM WARD  
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25 Bog, 1s. 3d. 10 East Lovell, £1 18s 9d. 30 Sweet. Creek, £4 6 3/4s.  
20 Birdseye Cr., £3 1/2s. 30 Flagstaff, £3 1/2s. 20 So. Carn Brea, £3 1/2s.  
10 Cook's Kitch., £9 10s. 50 Lost Chance, 35s. 30 Tincroft, £3 2/4s.  
55 Cedar Creek, £2 5s. 6d. 70 Old Treburtgett, 16s. 3d. 20 So. Condurrow, £3 1/2s.  
100 Cathedral, 20s. 70 Richmond, £6 12s. 6d. 20 Van Consols, £4 6s 3d.  
1 Carn Brea, £6 8s. 10 Roman Grav., £1 15 1/2s. 15 West Chiverton, £2.  
25 Colorado, £2 1/2s. 20 S. Condurrow, £3 1/2s. 10 Wheal Kitty, £8 1/2s.  
3 Cwm Elan, 2s. 3d. 50 New Quebrada, £3 1/2s.

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20 Ashton, £2 1/2s.  
50 Almadra, 15s.  
45 Birdseye Cr., £3 13s 9d.  
50 Bog, 21s.  
20 Cook's Kitch., £10 1/2s.  
10 Cape Copper, £2 1/2s.  
25 Colorado, £2 1/2s.  
3 Cwm Elan, 2s. 3d.  
100 East Van, 28s. 6d.  
25 Devon Consols.  
25 Eberhardt, 23 7s. 6d.  
20 Eastern Extern, £7 3/4s.  
40 Flagstaff, £2 16s. 5d.  
15 Great Laxey, £1 2s.  
30 Great Vor, 12s. 6d.  
75 Hington Down, 23s.  
20 Hooper's Telec., £1 2s.

5 North British & Mer-  
cantile Insur., £2 8s.  
5 Ocean Marine, £10 1/2s.  
25 Old Treburtgett, 16s.  
50 Pennerley, 20s.  
45 Perkins, Beach, 8s. 3d.  
15 Providence, £3.  
30 Prince of Wales, 10s.  
20 Parry's Mountain, 10s.  
30 Plymhill, 6s. 3d.  
20 Welsh Freehold, £3 8 9/10s.  
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Birdseye Creek, 33s. 33s.	Rookhope Valley, 14s. 20s.
Bog, 17s. 20s.	South Condurrow, 33s. 4
Carn Brea, 65. 70	South Roman Gravels, 10s. 11s.
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Cook's Kitchen, 9. 10	Sweetland Creek, 4 1/2s. 4 1/2s.
Devon Great Consols, 15s. 20s.	Tankerville, 8 1/2s. 9
Dolcoath, 48. 48	Tecoma, 1. 1 1/2s.
East Lovell, 12. 13	Tincroft, 32. 33
Emmra, 1 1/2s. 2 1/2s.	Trumpet Consols, 11 1/2s. 13 1/2s.
Flagstaff, 3 1/2s. 3 1/2s.	Tylwyd, 15s. 17s.
Great Laxey, 11 1/2s. 12	Van Consols, 4 1/2s. 4 1/2s.
Ladwyd, 2 1/2s. 3	West Chiverton, 1 1/2s. 2 1/2s.
Old Treburtgett, 16s. 17s.	West Tankerville, 7s. 6d. 10s.
Pennerley, 13s. 15s.	West Maria, 7s. 6d.
Penstruthal, 11s. 13s.	Wheat Crober, 17s. 6d. 22s. 6d.
Prince of Wales, 11s. 13s.	Wheat Grenville, 4 1/2s. 5
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Emma.	West Wheal Gorland.	Malpas.
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Kitty (St. Agnes).	Pacific.	Rica.
Cedar Creek.	Malabar.	West Esgril Lie.

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## ABRIDGED PROSPECTUS.

This company is formed for the purpose of acquiring and working a most valuable mineral property known as the Ynisdwre Estate, situated in the parish of St. Bride's Minor, in the county of Glamorgan. The property contains about 210 acres, of which nearly 200 are held under lease for a term of 51 years unexpired. It is situated almost in a ring fence, and abounds in coal, ironstone, and fire clay of the best description. This working may well be described as a "perfect bed of coal," containing about 100 ft. of working coal.

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passing from this state to that of ordinary hydrogen, it disengaged a definite quantity of heat. Pursuing his researches on hydrogen, he studied its absorption by palladium, and has recently extended his observations to the condensation of electrolytic hydrogen by platinum-black. These researches show that there is a marked difference between the two cases. With platinum-black the gas is condensed in the form of ordinary hydrogen; whilst with palladium it suffers a molecular change, whence it passes into an allotrope condition.—*Theneum.*

### THE WASHOE GOLD AND SILVER PROCESS.

The treatment of gold and silver by wet crushing and pan amalgamation without roasting, usually called the Washoe process, was generally described in an exhaustive paper read at the recent meeting, in New York, of the American Institute of Mining Engineers, by Mr. J. M. ADAMS, M.E., of Silver City, Idaho. He assumes that the general arrangement of a quartz mill is understood, and treats the question so as to show how to secure from such a mill the greatest economy in working combined with the largest results. The more uniform in size the ore is prepared for the stamps the more easily can it be fed into the mortars. The ore should be so fine that a single blow of the stamp will be sufficient to shatter thoroughly each piece of ore. If a large piece is fed into the mortar, it may not be broken up thoroughly after several blows or drops of the stamp. Besides, a large piece raises the stamp and reduces by so much the fall, thereby taking away part of the effect, and consequently diminishing the production. In preparing the ore for the stamps they at first used hand-rock-hammers. The stamps were dropping 60 times a minute. Breaking by hand on average hard ore, they could not work over 20 tons a day; then, by breaking very small by hand, they increased their production to 30 tons a day; but afterwards, by erecting a Blake's crusher, the stamps were raised to 33 tons a day; by breaking the ore very fine, they increased it to 37 tons a day on the same ore; and finally, by accelerating the rate of running the battery to 95 and 95 drops a minute, and keeping the same height of drop (8 in. to 10 in.), but using a coarser screen, they increased their production to 45 and 48 tons of ore crushed in 24 hours. But in breaking the ore very fine they found that the lowest end of the die or fixed breaking surface in the crusher wore away much faster than the middle or the upper part. True, they could turn the die, and so get wear from the upper part, but the middle part was wasted and lost, except as old iron. They overcame this by adding to the part of the die a projection on the low end, thus increasing the thickness at that place, and in this way were able to get full wear of the whole die.

The most economical method of preparatory crushing would be to have two breakers, one set above the other. The mill having, as every mill should have, practically plenty of natural fall—in other words, being built on the side of a steep hill—the first breaker should be placed above, and set so as to crush to a diameter of 2 in. Of course, a long, flat, and thin piece might go through, but at least one dimension will not be over 2 in. in diameter. All the fine, as well as the coarse, ore should pass through this breaker. When the ore is dry, let a very small jet of water flow into the mouth of the breaker to prevent the dust from flying. This water involves a loss, and also injures the machinery. From the first crusher let the ore pass into the second. This should be set so that the breaking surfaces almost meet at the lower end. From here chutes should lead to each but of ten stamps, or two mortars. If the ore contains much clay, it may be necessary to separate the fine ore and clay, and deliver it to the battery floor without going through the rock breakers, which the clay tends to choke up. The consumption of iron per ton of ore prepared in this way for the stamps will be about 0.3 of a pound.

Mr. Adams believes, automatic feeding will be universally adopted, especially for ore broken to a uniformly small size. Even under present circumstances the automatic feed is more economical than to have a man feeding who is less, lazy, or inexperienced. For a good battery-feeder he prefers a small, intelligent, active, and wise man—a tall or stout man cannot stand the jar of the battery constantly and do good work. A tough man can endure feeding 20 stamps for 12 hours. If 10 stamps or less are to be supplied with ore self-feeding is more economical than feeding by hand, as performed by ordinary workmen; but if the mill is pressed with work, and the pans are of sufficient capacity to crowd the battery, the self-feeding apparatus is not so good as a man, faithful and skilful. Even if he must be paid 1<sup>1</sup>/<sub>2</sub> per day he will more than earn his wages by the increased production of the whole mill. Low feeding is the best; let iron almost wear on iron. The skilful workman will feed low and uniformly, and not by sight, but by the sound of each stamp, and specially to each stamp. Under this system a stem may break occasionally, but it does not take long to put in another. The broken stems can be repaired by cutting off above the break and welding on a piece of a bar of rolled iron, which is subsequently turned off in a lathe. Even if three stems out of 20 are broken every month the cost of repairing, &c., amounts to little compared with the increased production obtained by low feeding. As regards the weight and speed of the battery, his experience favours light stamps and drop (running to 10 in. before setting), was run at a speed of 93 drops a minute, the cams having a bent off, so as to have short cams. Such a speed gives no time for the stems to settle in the sand, and as long as bolts are kept tight, nuts secure, and guides snug, no serious breakage need be apprehended. On ordinary ores the consumption of iron per ton of ore prepared in this way for the stamps will be about 2 lbs.

As regards the supply of water for the battery, there should be as much fall as possible from the battery to the tanks, so that the conducting troughs will keep clear and not choke up; they will then require no excess of water. The supply to the battery must vary according to the clay in the ore. Use as little water as practicable, consistent with keeping the screens perfectly clean. The more clay, the more water needed; the more clay, the greater necessity for careful low feeding, in order to avoid the choking up of the mortar. If too much water is used to remedy the effect of careless feeding, an unnecessarily large amount of slimes is carried off out of the mill in the waste water from the battery and tanks. To avoid loss of slimes it is well to use a rather coarse screen, especially in clayey or silty ores, so as not to puddle or churn the ores in the mortar more than necessary.

This is particularly to be looked after when the ore is largely true silver ore, or the gold very fine. As regards setting the battery, it is, he considers, preferable to give the centre stamp of the five in each mortar the most drop, those adjacent on each side  $\frac{1}{4}$  in. less, and the outside ones  $\frac{1}{4}$  in. less still. But some millmen prefer setting.

There is a strong objection to amalgamation in the battery. The amalgam thus formed is mostly a gold amalgam, and hence is worth much more than the ordinary amalgam of a silver mill, and of this the workmen are well aware. It is, therefore, an additional temptation to stealing. The only benefit to be claimed for it is the possible catching of some of the gold otherwise floating away in the water and catching in the slimes. It will be found, however, that this amount of gold is very small. The entire loss in gold in the slimes is not over 1 per cent. of the entire amount of the gold in the ore. This is not a very heavy loss, and, besides, most of this gold can be collected in the slime yards, while of the remainder much is so fine that it is doubtful if quicksilver in the battery would catch it. Why, he asks, should we then amalgamate in the battery, when we know that, except a very small and doubtful saving from the gold of the slimes (which seems offset by mechanical losses), all this gold is saved just as thoroughly in the cast iron pans? The gold is not concentrated before entering the pans; if it underwent such a process of course there would be additional chance of loss of fine gold, and an additional argument for amalgamation in battery. It will be perceived that the reasoning just given applies, therefore, to the Washoe process, and not necessarily to gold mills where pans are not used. Yet even there the practice of amalgamation in battery is not universal, nor, indeed, the best.

There should be as many tanks as possible, in order to settle the maximum quantity of slimes inside the mill; and the system should be so arranged that as each tank is emptied of sand the escape or waste water can be turned into it. Each tank thus becomes in turn the final one of the series, and receives all the water after settling through all the other tanks. There should never be more than three tanks full of sand; the remainder, even when there are 20 of them, should be used for settling of the slimes in the water. Each tankful of sand must be settled or prepared so that the contents can be easily handled with the shovel and charged into the car for transfer to the pans. In other words, the superfluous water must be removed. The ore is now in the shape of a wet coarse sand, called pulp, containing, according to its original nature and the character of the crushing, more or less slime (locally called "slum"). So far the process has been entirely mechanical, and the efficiency which has been achieved in this part of the treatment is measured by mechanical tests. The results from these arrangements may be thus summarised:—48 tons of hard ore crushed with 20 stamps, of 650 lbs. dropping 8 $\frac{1}{2}$  in. 95 times a minute, the ore from the breaker being fine, No. 4 screen being used. This is per 24 hours 24.10 tons per stam, or 1.39 tons per horse-power developed.

There are many different styles of pans, the Wheeler being preferable for a small quantity of ore, and the Stevenson mould-board pan where a large one is desired. The general principle is the same. The ore to be heated and ground thoroughly to an impalpable substance; an active motion or circulation given to the pulp; the silver thoroughly reduced; the gold thoroughly brightened and cleaned from its occasional intimate mechanical mixture with foreign minerals; and finally the gold and silver are to be as entirely as possible taken up by the quicksilver. Chemicals are used, partly to reduce the ore, partly to save quicksilver and keep it clean, and partly to reduce by cheaper means what would otherwise be reduced at the expense of the quicksilver.

It may be assumed, as a fair average, that the charge is run five hours. All the times used, except those of saving quicksilver, are put in the pan at different times, and after the last one is put in there should be at least 20 minutes before the quicksilver is discharged. He prefers to put in the quicksilver in the middle of the period—2½ hours before drawing the charge, and use at the rate of 200 lbs. per ton, per 200 lbs. of ore, or a larger proportion of quicksilver if required by the richness of the ore. Three-quarters of an hour before discharging the muller is raised, since, if the pan is in good order, the charge should be by this time thoroughly ground, and raising the muller avoids further cutting up of quicksilver at the grinding. At the time of raising the muller the chemicals used for saving water is added to thin the pulp thoroughly; this prepares the charge to flow readily out of the pan, and also stirs up any pulp that may be moving sluggishly, at the same time the mass is considerably cooled.

The range of these remarks being purely mechanical, the subject of chemicals (mainly salt and sulphate of copper) in the pans will not be here discussed, sufficient to say at present that his practices and numerous experiments have disposed him strongly in favour of using chemicals, and using them largely. When only a low percentage is expected, and from a docile ore, there is often no need of any chemicals at all, though even then a judicious use of suitable reagents will save some of the quicksilver. The more refractory the ore the greater necessity for chemicals, and for high heating of the pans. From ordinary and docile ores 80 per cent. of the assay can, in some cases, be readily obtained without use of chemicals, keeping the quicksilver in perfect order. The additional percentage obtained I run up to 95 per cent. and over, which he himself has frequently obtained on gold and silver ore, is only to be gained by the use of chemicals.

The most important point in the process is to keep the quicksilver always bright, clean, active, and in good order. In working an ore that fouls the quicksilver, it is not practicable to keep the quicksilver clean in the pan, it should at least be put in perfect order before it is again used for another charge. In such cases it is important to keep the pan as free from quicksilver as possible during the first part of the process. For cleaning quicksilver, sodium amalgam, caustic

potash, dilute acids, cyanide of potassium, &c., are used. Even in working dolomite it is well to keep a cleaning mixture on the quicksilver under the strainers. The consumption of iron in the pan is about 10 lbs. per ton of ore; but this, he thinks, can be diminished without the loss of efficiency in grinding. From the pan the charge is drawn into the settler. On drawing the charge, the greater part of the quicksilver runs quickly into the bowl or reservoir of quicksilver in the bottom of the settler, whence it flows out, free from sand, through a siphon into a kettle outside. It is preferable to fill the settler when the charge is drawn with water falling as a rain, and when the settler is full to let nothing run out, but turn off the water and run the stirring-arms in the charge for an hour. This collects the floury quicksilver somewhat, and settles it. Then turn on plenty of water and let the settler discharge through the top plug hole as long as possible. The operation should be so timed as to reach the bottom hole of each individual settler only just in time to receive the next charge. The settler will never choke with heavy sand if the pan has ground well and the driving-belt is in good shape.

A good supply of water should be kept constantly running in the agitators. Here there will be found some coarse sand, containing a little silver, amalgam, sulphur, and considerable iron; but the saying is very small. Except on ores containing a large proportion of heavy sulphur, or containing much slime that coats quicksilver, he has found but very little benefit in concentrators applied to the tailings from the pans. In ordinary cases they collect little except iron from the pan and coarse sand. The pans grind so fine that the precious metals left in the tailings is very difficult to concentrate after leaving the agitators—provided the ore has been well worked. It is necessary to have a regular supply to the concentrator; and this may be effected with siphons of 1½ in. and 2 in. pipe. I have found Hungerford's concentrator very good for slimes and slimy ores, since the shaking washes the flour and slime coated quicksilver very well. After leaving the concentrator, the tailings were run in the Owyhee mill, over a double set of blanket sluices, 250 ft. long, but it was found that on the ores then worked the saying did not pay for the labour employed in frequent washing, and at last the blankets were washed only about once a week.

The quicksilver collected in kettles outside the settler is strained through the sack; the amalgam collected is cleared from the small mechanical impurities in a cleaning pan, then strained and retorted in an iron retort, beneath which fire is kept up for eight to twelve hours. The distilled quicksilver is condensed by a sleeve around the escape pipe, filled with water. After cooling, the retort is opened, and the bullion is taken out and delivered to the assayer. The retort is a source of considerable expense in milling. His experience leads him to prefer a cylindrical retort of cast iron, weighing about 1200 lbs., and 48 in. inside dimensions. He has made many experiments, such as retorting in vacuum, firing 24 hours at a moderate heat, &c., but finally concluded to brace the retort as well as possible, never heat it above cherry-red, and submit to the loss of 1 per cent. of quicksilver for the present. Even in a cherry-red heat, however, the retort gradually gets out of shape, and once out of shape soon bursts or cracks. To preserve the original shape as long as possible, he found it advantageous to hang the retort on four slings. Each of these is a semi-circular cast-iron brace, on which the retort rests; wrought iron rods, so attached that they can be renewed if burned out, are fastened to the cast-iron braces—one on each side of each brace. In this way, and by a careful and moderate heat, he was able to make retorts last 1½ year in constant use.

By slimes or slums he does not mean to include any slimes whatever from the pan tailings. If the ore has been properly and exhaustively worked there is not left in any part of the tailings from the pans any gold or silver that can be recovered by working these tailings, unless they be roasted or exposed to action of air and moisture for many years. The slimes here spoken of have never come in contact with quicksilver, and have never been worked at all; they are carried off mechanically by the waste water that leaves the last tank below the battery; and they assay, as a rule, about 60 per cent. as much as the ore. Generally the assay buttons from the slimes are worth much less per ounce than from the ore—i.e., they contain proportionally less gold. The percentage of slimes varies with the amount of clay, and also depends much on the quantity of water used and the method of settling. In hard ores, with careful settling, slimes amount to 2 or 3 per cent. of the weight of the ore. The gold in the slimes is very light and flat; silver occurs largely in refractory sulphur, and also in a very finely divided state. The slimes from ores worth \$16 per ton or upwards may be worked with profit.

Every piece of gold that has come in contact with quicksilver, the canvastraining sacks, the worn-out pan shoes and dies, even after careful washing and breaking, the thoroughly washed and shaken quicksilver flasks, the used up kettles and dippers, the floors, &c., all have quicksilver sticking to them; the men carry quicksilver on their boots and clothes, and it is found scattered in very small quantities outside of the mill. It goes everywhere. Drop a globule on the floor, you cannot entirely recover it. Climb up 40 or 50 ft. to the cross timbers in the top of the mill, collect some of the dust on the top of the timbers, examine it with a glass, or wash it, and you will find quicksilver. Some is lost every time crude bullion is melted. Every pound of quicksilver is handled probably forty times a day, and every time there is a little loss. (Quicksilver should be handled as much as possible mechanically, being raised by steam in pipes, or some other arrangement.) Quicksilver not covered with water or other liquid evaporates in the air. These losses can only be prevented partially by the greatest cleanliness. Again, quicksilver charged with copper readily becomes coated with small particles of iron. In the pulp it is readily coated by iron pyrites, greases, slimes, &c., or reduced to great fineness by grinding. In these "floured" and coated conditions much of it will float away and be lost, unless means are employed to collect it. He has found cyanide of potassium very effectual for this purpose; thorough settling also collects a good deal. Ores containing much talc likewise act unfavourably on quicksilver. As soon as quicksilver is fouled and becomes sluggish, it not only loses to a large extent its amalgamating power, but also is easily cut up and floored. In addition to the sources of mechanical loss above mentioned, much of the quicksilver is lost.

In conclusion, he has only to say that, in his opinion, even base and refractory ores can frequently be worked more profitably by this process than by the vastly more expensive methods of dry crushing, roasting, smelting, &c. Much of the credit to be given for many points brought forward in his paper are, he says, due to Mr. William F. Carter, mechanical engineer, who has worked with him continually for several years past.

**THE ISLAND OF ARUBA.**—This little island bids fair to become quite famous for its gold product; mining operations having already been commenced there on a large scale. The island is situated just off the north-west coast of Venezuela, in latitude 12° 40' N., and longitude 70° W. from Greenwich. It is about 20 miles in length and from 5 to 7 in. width. Svenite is its prevailing rock. Granite, greenstone, and slate (diorite and talcose) occur to some extent. A belt of limestone (coral) from 500 ft. to 1 in. in width surrounds the island. The surface of the island is mountainous or hilly, the greatest elevation being 600 ft. Aruba is sparsely wooded. The chief articles of export are aloes and peanuts. A species of corn called by the natives "mico," much resembling broom corn, is grown for food. The climate is uniform, the thermometer in the shade or at night time never falling below 75° or rising above 92° Fahr. The trade winds blow from 15 to 20 miles an hour for nearly 10 months a year. Two hundred and upwards gold-bearing quartz veins have been discovered on the island. These veins are well defined; some of them quite large—one is 23 ft. in width. They prospect well—gold being found 1 in panning nearly every time. The mineral resources of Aruba have been conceded for 35 years to the Aruba Island Gold Mining Company (Limited), the stock of which is owned in London and New York. The company have erected a California 20-stamp mill to run by six Empire windmills and their windwheels being 35 ft. diameter each. Salt water is used for milling purposes. There are as yet but two stamps running, which crush about 20 tons of rock per day—the rock thus far has paid \$20 a ton. Prior to the concession of the mines to the company some veins were worked by the natives with highly gratifying success. They treated none of the rock in which gold could not be seen by the unaided eye. The rock was broken to the size of wheat grains, then placed on a flat pan and mulled by hand, with a stone weighing 30 lbs., or thereabout. The pulp was then washed in a calabash shell (sort of a gourd shell). The amount of gold taken out was estimated to be nearly \$1,000,000. There are about 5000 inhabitants on the island. These consist of (say) 200 whites of Dutch origin, 500 negroes, formerly slaves (slavery was abolished about 10 years ago), 500 Indians, and the balance of a mixture of various shades of colour. The standard wages are 30 cents a day without board. The inhabitants are kindly disposed and docile people. We have gathered the above facts from a conversation with, and from the written reports presented to the company by Mr. P. M. Randall, a mining engineer, formerly of this city, but now of New York, and on a visit to San Francisco.—*Mining and Scientific Press, San Francisco, May 23.*

**COAL IN AUSTRALIA.**—The Melbourne Correspondent of the *Times* writes:—An enterprise which may be of the highest value to the country has not yet attracted the attention it deserves. Although our own geologists, and latterly the Coal Viewer of the New South Wales Government, have pronounced decidedly against the existence of payable coal in Victoria, cargoes of coal from a Victorian mine have been sold in the Melbourne market at good prices, and the coal is said to be of excellent quality, and preferable in some respects to that from the Antipodean Newcastle. It comes from the Kilcunda Mine on the eastern shore of Westernport. The surface of the island is mountainous or hilly, the greatest elevation being 600 ft. Aruba is sparsely wooded. The chief articles of export are aloes and peanuts. A species of corn called by the natives "mico," much resembling broom corn, is grown for food. The climate is uniform, the thermometer in the shade or at night time never falling below 75° or rising above 92° Fahr. The trade winds blow from 15 to 20 miles an hour for nearly 10 months a year. Two hundred and upwards gold-bearing quartz veins have been discovered on the island. These veins are well defined; some of them quite large—one is 23 ft. in width. They prospect well—gold being found 1 in panning nearly every time. The mineral resources of Aruba have been conceded for 35 years to the Aruba Island Gold Mining Company (Limited), the stock of which is owned in London and New York. The company have erected a California 20-stamp mill to run by six Empire windmills and their windwheels being 35 ft. diameter each. Salt water is used for milling purposes. There are as yet but two stamps running, which crush about 20 tons of rock per day—the rock thus far has paid \$20 a ton. Prior to the concession of the mines to the company some veins were worked by the natives with highly gratifying success. They treated none of the rock in which gold could not be seen by the unaided eye. The rock was broken to the size of wheat grains, then placed on a flat pan and mulled by hand, with a stone weighing 30 lbs., or thereabout. The pulp was then washed in a calabash shell (sort of a gourd shell). The amount of gold taken out was estimated to be nearly \$1,000,000. There are about 5000 inhabitants on the island. These consist of (say) 200 whites of Dutch origin, 500 negroes, formerly slaves (slavery was abolished about 10 years ago), 500 Indians, and the balance of a mixture of various shades of colour. The standard wages are 30 cents a day without board. The inhabitants are kindly disposed and docile people. We have gathered the above facts from a conversation with, and from the written reports presented to the company by Mr. P. M. Randall, a mining engineer, formerly of this city, but now of New York, and on a visit to San Francisco.—*Mining and Scientific Press, San Francisco, May 23.*

**MINERS AND MINING.**—The Australian papers bring some news of interest to miners. The *Ballarat Courier* understands that a number of Ballarat miners left for Wales by the Lady Jocelyn, advice from their friends in Wales being to the effect that plenty of employment, with good wages, can be obtained by efficient miners there. The *Ballarat Argus* of April 29 has the following:—“We learn that a company is in the course of being formed in Melbourne for the purpose of utilising the discoveries of iron lately made in the province of Nelson in New Zealand, on the shores of Massacre Bay. A prospectus has been issued, from which we gather that the ore is of extraordinary richness, and the iron produced of the most superior quality. When tested in Melbourne the ore was smelted in a quarter of the time required by the celebrated Cleveland ores, at about one-fourth the expense, and with only 10 per cent. of flux instead of 30 per cent. The pig iron was puddled in about a fourth of the time required by English pig, and as malleable iron it is said to be inferior only to Swedish, being exceedingly malleable and ductile. It can be produced in a pig cast of 3/4 per ton, and in marketable bars of 6 per cent. The fact, moreover, that this company has also made arrangements for the purchase of a coal mine at three or four miles distance, advantageously worked for some time past by another company, is also a marked feature, inasmuch that a sufficient coal to reduce the blast is to be obtained by the use of chemicals, and for high heating of the blast. Fifteen minutes before drawing the charge sufficient water is added to thin the pulp thoroughly; this prepares the charge to flow readily out of the pan, and also stirs up any pulp that may be moving sluggishly, at the same time the mass is considerably cooled.

The range of these remarks being purely mechanical, the subject of chemicals (mainly salt and sulphate of copper) in the pans will not be here discussed, sufficient to say at present that his practices and numerous experiments have disposed him strongly in favour of using chemicals, and using them largely. When only a low percentage is expected, and from a docile ore, there is often no need of any chemicals at all, though even then a judicious use of suitable reagents will save some of the quicksilver. The more refractory the ore the greater necessity for chemicals, and for high heating of the pans. From ordinary and docile ores 80 per cent. of the assay can, in some cases, be readily obtained without use of chemicals, keeping the quicksilver in perfect order. The additional percentage obtained I run up to 95 per cent. and over, which he himself has frequently obtained on gold and silver ore, is only to be gained by the use of chemicals.

The most important point in the process is to keep the quicksilver always bright, clean, active, and in good order. In working an ore that fouls the quicksilver, it is not practicable to keep the quicksilver clean in the pan, it should at least be put in perfect order before it is again used for another charge. In such cases it is important to keep the pan as free from quicksilver as possible during the first part of the process. For cleaning quicksilver, sodium amalgam, caustic

### FOREIGN MINES.

**ST. JOHN DEL REY MINING COMPANY (Limited).**—Advices received June 1, 1874, per Tiber, dated Morro Velho, May 1.

**GENERAL OPERATIONS.**—During the past week (last advice being under date the 23d current) the general work has been carried on with regularity both at the surface, in the shafts, and excavations, and very fair duty has been accomplished in the quarrying and raising of mineral.

**GOLD EXTRACTED TO DATE.**—The produce extracted during the second division of this month, being a period of 15 days, amounts to 10,230 oits. It has been derived as follows:

General mineral ..... 9284.4 from 1248 = 7.439  
Re-treatment

water was met, but I believed it would drain out. Instead of so doing it seems to increase, and I have had to shut up the openings at two points. If this state of affairs is to continue it will only be possible to run the main drifts ahead, and give the ground time to dry out, which it will do in a couple of months. I shall make a strong effort to keep two double breasts of 80 ft. length each open and working, but it is slow, tedious work. Men are drenched with water from overhead in a few moments. I prospected last week some of the old breasts, and found the gravel to pay only 80 per car-load; that will not leave a profit to work alone, and they will be stopped. No further prospecting has been done in new ground since last writing, as only a few men have been able to work, and those were employed timbering. I will try and give more definite information in my next as to what may be expected in new ground. The tailings are being run down preparatory to cleaning the bed of ravine channel.

**BIRDSEYE CREEK.**—G. S. Powers, May 25: Since my last I am in receipt of your letter of April 18. I have been away for the past week taking a look at the workings of the mines in Yuba and Sierra counties, in order to gather such information as may be useful to me in fitting up the Birdseye claims. The water in Stahl ditch is running down rapidly, and we shall not be able to wash in this mine longer than this month out, except we buy from South Yuba, and I doubt if we can make it profitable, as it will not increase the pressure, and I shall be obliged to blast a portion of the bank. The Birdseye ditch has a full supply, and looks as though we might have a full supply until the latter part of June. Peche tunnel and shaft are progressing finely. I shall measure the distance tomorrow that has been run to that date, and report the same. There is not much change in the working of Nece and West, except we are gradually getting over the old workings, and we now have a drift ready to explode in solid bank on the east side of the channel, the first we have had in solid bank. Walpava is exceedingly hard, and we are not getting all the gravel at present that the water will wash away, but I am looking for a change for the better.

**LUSITANIAN.**—The lode at Taylor's engine-shaft below the 170 is 10 to 12 ft. wide, composed of quartz and stones of ore on the north part of it. At the 170, east of Taylor's, the lode is 6 ft. wide, composed of quartz and stones of ore in the bottom of the level. At the 170, west of Taylor's, the lode is worth 1 ton per fathom. At the 150 east of Taylor's, the lode is 3 ft. wide, composed of quartz spotted with ore. At the 140, west of Taylor's, the lode is very small—of a dry flock. At the 130, east of River-shaft, the lode is 2 ft. wide, composed of quartz and country. At the 120, east of River-shaft, the lode is in two branches; the north one is 2 in. wide, with ore in it. At the 110 east the lode is 8 in. wide, composed of quartz, with copper and cobalt. At the 100 east the lode is 1 ft. wide, with spots of lead in it. At the 80 east the lode is small and unproductive. At the 70 east the lode is 1 ft. wide, composed of quartz and stones of lead. At the 60 east the lode is nearly 3 ft. wide, composed of quartz, spotted with ore.—Carvalhal: At the 50, east of incline shaft, in the level on Great lode, the lode is 1 ft. wide, composed of a little quartz and schist. We have put the men to see if there is more lode there. The lode at the top of adit, south-east of River Caima, is from 1 to 1½ ft. wide, composed of quartz, spotted with lead and mica.

**BENSBERG.**—C. Caze, June 15: I beg to hand you the following report of the mine:—Victoria shaft appears to be getting through the lead-bearing part of the lode. We intend to go down about 3 ft. more perpendicularly, and if then fully through it to break the underlie, and follow the angle of the lead-bearing part, which is still producing good ore.—New Shaft: In the level east of this shaft we are cutting north, in order to meet with the better part seen in the east of open cast; there is a little one in the end, but we expect to have to drive 2 fathoms more before we meet with the best part of the lode. In stopping the level west of this shaft we find a good part of the lode standing on the north side, the lead here here is freer of the pyrites, and I think it will give a good percentage when dressed; the stopes east and west of this shaft will turn out 3 tons of ore per fathom. The level being driven in south east side of open cast will produce about 1 ton of good ore to the fathom. There is nothing new in any other part of the mine to remark on.

**MENZENBERG.**—R. K. Roskilly, June 13: Dickin's Engine-Shaft: We have again set this shaft to sink below the 34, to nine men, at 100 thalers per lachter. The ground here is of a very congenial nature, which is just the same for progress as when last reported on, and its sinking is being pushed on with vigour. Our engine and pitwork are working well.

## Original Correspondence.

### WEST GREAT WORK MINE.

**SIR,**—I find a petition has been filed by Messrs. Harvey and Co., merchants, Hayle, Cornwall, to wind-up the above mine in the Stannaries Court, owing to sundry writs being served upon them for 200L, a disputed claim for land damage, and it would appear that Messrs. Harvey wish the West Great Work shareholders to fight at law, and stand the expenses of an action in which many mines in the district are interested. This the shareholders do not intend doing to gratify Messrs. Harvey or anyone else. On Wednesday next the Liquidator will protest against the Bill, and there is every prospect of its being dismissed by the Vice-Warden of the Stannaries Court.

The shareholders are fully aware the prospects of the West Great Work Mine were never better than at the present moment, that the mine was being formed into a limited liability company (the only safe way of working a mine), and if the Liquidator is successful in getting the petition dismissed all will yet be well. A short history of this little piece of business will be published for the benefit of shareholders in the West Great Work and in all other Cost-Book System mines.—33, Poultry, E.C. H. GOULD SHARP.

N.B.—Messrs. Harvey and Co. hold 10 shares only.

### PENNERLEY MINE, AND ITS MANAGEMENT.

**SIR,**—A writer in last week's Journal is too hard on the Pennerley agents. The ends in Pennerley during 1873 were reported poorer than in the two previous years. It takes six or eight months in the Shropshire mines to put a winze through from one level to another, and it is only since last December that the great improvements at Potter's Pit have been reported. Little has been done at the bottom of the old mine for want of ventilation. This will soon be remedied, and I fully expect that Pennerley samplings will reach 100 tons per month before the end of the present SHAREHOLDER.

(For remainder of Original Correspondence see this day's Supplement.)

### MINING NOTABILIA.

[EXTRACTS FROM OUR MINING CORRESPONDENCE.]

**LILANGENNECH COLLIERIES COMPANY.**—At the first annual meeting of shareholders the statement of accounts and the report of the directors were read and adopted. The report states that the output has been steadily increased from 70 to 200 tons per day, that a new pit or drift has been opened from which coal is now being won, that arrangements for the erection of patent fuelworks (which will cause the small coal to bring as good a price as the large) are nearly completed, that the opening of a third pit or drift is under consideration, and that the general condition of the property has been greatly improved.

**TREVARRACK.**—This mine is being judiciously worked by the energetic sinking of the main shaft. Expectation runs high concerning the future, and there can be no doubt of its becoming one of the best mineral properties in the district.

**WHEAL MARY.**—I am glad to see that fresh blood has been infused into this mine, and I hear the new directors are likely to enter with spirit into the concern. It would be a great pity to allow such a valuable property to slip into the hands of some persons who have been trying for a long time to prejudge the shareholders. This, I think, is beyond question, for no one who has seen the mine can contradict what has been reported of it by the various agents. I, as a shareholder, take a deep interest in the welfare of the company, and I hope all will rally round the new directors, and give them their hearty support, and then the mine, which is spoken of as one of the best in Cornwall, will be a credit to all concerned. I hear the new prospectus will be issued next week for the unallotted shares, at 3s. each.

**WEST ESGAR LLE.**—The dry weather still continues, and the works are consequently much impeded, especially the ore dressing, for want of water. At the eastern mine the lode in the 24 east has been opened on, and found to be improving in value every foot driven. There is a course of ore, worth from 2 to 3 tons per fathom for 15 fathoms long, gone down in the bottom of the level above, and just in advance of this end, so that, no doubt, when extended a little further it will be met with, as the lode has been improving continuously in every successive level reached. The shaft is being carried down, by nine men, as speedily as the dry season will allow. The wall of the lode in the bottom still presents the same encouraging appearance, leading to the irresistible conclusion that directly broken into in the next level a great course of ore will be laid open. The whole of the machinery on both mines is in excellent condition.

**CATHEDRAL.**—The lode is yielding good quantities of copper ore, and a substantial sale will be made within two months.

**CHEMICALS AND MINERALS.**—(Messrs. R. R. Kelly and Co., Manchester, June 19.)—Chemicals: Acid, citric, 4s. 2d.; muriatic, 4s. 10s. to 8s.; sulphuric, 3s. 10s. to 6s.; tartaric, 1s. 7d.; alum, best lump, loose and in barrels, 8s. 10s. to 9s.; ground, 9s. 10s. to 9s. 15s.; calc alum, 6s. 10s.; ammonia, carbonate, 7s. 1d. to 7s. 4d.; muriate, 32s. 10s.; sulphate, white and grey, from 16s. 10s. for 23 per cent., 17s. 10s. for 26 per cent.; brown, 23 per cent., 18s. 10s.; sal ammoniac, 4s. to 4s.; arsenic, white powdered, 10s.; borax, 30 per cent., 2s. 3d.; 90 per cent., 3s.; bleaching powder, 11s. 2s. to 11s. 10s.; copper sulphate, 2s. 6d. to 27s. 10s.; green and rusty copperas, 6s. to 7s.; Epsom salts, refined, 5s. 15s. to 6s. 5s.; potash salts, muriate, 8s. 5d.; pots, 3s. 6d.; pearls, 4s. 6d. to 4s. 10s.; chlorate, 10s. 2d. to 11d.; muriate, 8s. to 1s. 3s. 4d.; tartarate (cream of tartar), French, 8s. 11s.; saltpetre, 20s. 6d.; Soda Salts: Acetate, 37s.; bicarbonate, 16s. 15s.; borate (borax), refined, 7s. 5d.; soda ash, 4s. to 5s. per cent., 2s. 10s.; soda crystals, 8s. 7s. 6d.; ex ship; caustic, 8s. 60 per cent., 15s. 10s.; white, 18s. 10s.; 70 per cent., 20s.; nitrate, 11s. to 11s. 3d.; Sulphate (Glauber salt), 4s. 10s. to 5s. 10s.; salt cake, 3s. 5s. to 3s. 10s.—Minerals: China clay, 4s. to 4s. 10s.; phosphates of lime, ordinary, 60 per cent., 1s. 90 per cent., 1s. 4d. to 1s. 5d. per unit; Bolivian, 6s. 15s.; Canadian, 80 per cent., 4s. 10s. per unit; Estremadura, 1s. 3d. to 1s. 5d.; Curacao, 6s. 2s. 6d. U.K.; and 6s. 5s. to 7s. Continent, 10s. per cent.; Chrome ore, 6s. to 8s.; copper ores, 1s. to 1s. 10s. the unit; iron ores, red haematite, British, 2s. 8s. to 3s. 6d.; Spanish, none; clay ironstone, 15s. to 26s.; colitic, 9s. to 12s.; burnt iron ores, 6s. per cent., 6s. the unit; manganese ores, 70 per cent., 140s. to 150s.; pyrites, cupreous, 8s. 2d.; non-cupreous, 10d. the unit; antimony ore, 10s. to 12s.

### COAL MINES REGULATION ACT, 1872.

#### EXAMINATION FOR MANAGERS' CERTIFICATES OF COMPETENCY.

DISTRICT UNDER THE CHARGE OF THOMAS EVANS, Esq., H.M. INSPECTOR OF MINES.

**NOTICE IS HEREBY GIVEN**, that an EXAMINATION for MANAGERS' CERTIFICATES OF COMPETENCY, under the above-named Act, will be HELD on the 9th and 10th days of July next, and CANDIDATES intending to present themselves at such EXAMINATION must, on or before the 4th day of July next, notify such intention to the Secretary of the Board, By order of the Board,

WILLIAM SAUNDERS, Secretary,  
Full-street, Derby.

Royal Cornwall Polytechnic Society.

**THE FORTY-SECOND ANNUAL EXHIBITION** will OPEN at the POLYTECHNIC HALL, FALMOUTH, on TUESDAY, the 25th of August next, when PRIZES will be AWARDED in the MECHANICAL, FINE ARTS, PHOTOGRAPHY, and other departments.

For Prize Lists, Entry Forms, and all information, apply to the Secretary, EDWARD KITTO, Polytechnic Hall, Falmouth.

DISSOLUTION OF PARTNERSHIP.

**NOTICE IS HEREBY GIVEN**, that the PARTNERSHIP heretofore subsisting between us, the undersigned JAMES BAIN, JOHN PATERSON, and JAMES ROBERT BAIN, as IRONMASTER and COLLIERY PROPRIETORS at HARRINGTON, in the county of CUMBERLAND, under the name or firm of "Bain and Paterson," has THIS DAY BEEN DISSOLVED BY MUTUAL CONSENT so far as relates to the said JOHN PATERSON, and that the business will in future be carried on by the said JAMES BAIN and JAMES ROBERT BAIN, under the firm of JAMES BAIN AND COMPANY.

As witness our hands the 10th day of June, 1874,

JAS. BAIN,  
JOHN PATERSON,  
JAMES R. BAIN.

Witness—JAMES BROOKBANK, Solicitor, Whitehaven.

VICE CHANCELLOR BACON, AT CHAMBERS.

**IN THE MATTER** of the JOINT-STOCK COMPANIES WINDING-UP ACTS, 1848 and 1849, and of the JOINT-STOCK COMPANIES WINDING-UP AMENDMENT ACT, 1857, and of the SOUTH LADY BERTHA COPPER MINING COMPANY.—By direction of the Vice-Chancellor, Sir James Bacon, the Judge of the High Court of Chancery, to whose Court the winding-up of this company is attached, notice is hereby given, that the said Judge will, on Monday, the 22nd day of June, at Twelve o'clock noon, at his chambers, No. 11, New Square, Lincoln's Inn, in the county of Middlesex, PROCEED to MAKE a CALL on the several persons who are settled on the list of contributors of the said company, and that the said Judge proposes that such call shall be for THREE POUNDS TEN SHILLINGS PER SHARE. All persons interested are entitled to attend at such day, hour, and place to offer objections to such call.

C. HARWOOD CLARKE, Chief Clerk.

R. P. HARDING, 8, Old Jewry, London, Official Liquidator.

YOUNG, JONES, ROBERTS, AND HALE, 2, St. Mildred's-court, London, Solicitors.

Dated this 3rd day of June, 1874.

C O L O N I A L B A N K .

Subscribed capital, £2,000,000.

Paid up capital, 600,000.

Reserved fund, 75,000.

The Court of Directors of the Colonial Bank hereby give notice that, in pursuance of the provisions of the Charter, a HALF-YEARLY GENERAL MEETING of Proprietors will be HELD at the London Tavern, Bishopsgate-Street Within, on THURSDAY, the 2nd July, 1874, at Half-past Two o'clock precisely, to receive the report of the proceedings of the Corporation.

The Transfer-Books of the Corporation will be closed on the 22nd June and re-opened on the 13th July next.

By order of the Court of Directors,

JAMES CLARK, Secretary.

13, Bishopsgate-Street Within, 4th June, 1874.

DELAWARE AND HUDSON CANAL COMPANY SIX PER CENT. DEBENTURES OF 1875.

Notice is hereby given, that the COUPON due 1st July, 1874, on the Loan of £600,000, issued through Messrs. GILEAD A. SMITH and Co., will be PAID by the IMPERIAL BANK (Limited), 6, Lombard, on and after that date.

Coupons must be left one clear day for examination.

PRINCE PATRICK LEAD MINING COMPANY (LIMITED).

The Directors have THIS DAY DECLARED the FOURTH DIVIDEND, at the rate of TWENTY PER CENT. PER ANNUM, which will be PAID on the 16th July next.

By Order,

THOS. HUGHES, Secretary.

59, Seel-street, Liverpool, 17th June, 1874.

S. JOHN DEL REY MINING COMPANY (LIMITED).

Notice is hereby given, that the ANNUAL ORDINARY GENERAL MEETING of this company will be HELD at the London Tavern, Bishopsgate-Street Within, on WEDNESDAY, the 24th day of June next, at Two o'clock precisely, to receive and adopt the directors' report.

The Transfer-Books of the company will be closed from Thursday, the 18th, to Wednesday, the 24th of June, both days inclusive.

JOHN HOCKIN, Managing Director.

8, Tokenhouse-yard, London, E.C., 9th June, 1874.

COLORADO TERRIBLE LODE MINING COMPANY (LIMITED).

Notice is hereby given, that the FIFTH ANNUAL GENERAL MEETING of the shareholders of this company will be HELD at the company's offices, on MONDAY, the 29th inst., at Two p.m., for the purpose of transacting the ordinary business of the company.

The Transfer-Books of the company will be closed from the 18th inst. until the 30th inst. inclusive.

By order of the Board,

F. ANDREWS, Secretary.

21, Great Winchester-street, E.C., London, 19th June, 1874.

THE CAPE COPPER MINING COMPANY (LIMITED).

Notice is hereby given, that the ORDINARY GENERAL MEETING of this Company will be HELD at the Terminus Hotel, Cannon street, in the City of London, on WEDNESDAY, the 8th day of July, at Two o'clock in the afternoon, to receive the Report and Accounts of the year 1873, and for general purposes.

In conformity with the Articles of Association, two directors, viz.—Henry Hodgson, Esq. and John Wild, Esq. retire from office at the above-named meeting, but being eligible offer themselves for re-election.

The General Meeting will have to elect two auditors for the current year, and F. W. Collard, Esq. and Robert Fletcher, Esq. being eligible, offer themselves for re-election.

The Transfer-Books will be closed on the 25th day of June to the 8th day of July, both days inclusive.

By order of the Board,

J. C. LEAVER, Secretary.

6, Queen-street-place, London, E.C., 18th June, 1874.

RAILWAY CARRIAGE COMPANY (LIMITED).—ESTABLISHED 1847.

OLDBURY WORKS, NEAR BIRMINGHAM.

MANUFACTURERS OF RAILWAY CARRIAGES AND WAGONS, and EVERY DESCRIPTION OF IRONWORK.

## THE GUNPOWDER PILE-DRIVER.

Reference has several times been made to the use of gunpowder for the purpose of pile driving, but difficulties have usually been met with preventing the practical application of the system. These, it appears, have now been entirely overcome by Mr. THOMAS SHAW, of Philadelphia, and the general features and advantages of his particular design, as well as the principal features of the construction of the several forms of machines hitherto used. The first form of machine tested consisted of a wooden frame, almost identical with the ordinary pile-driver, but having cast-iron guides, made in short lengths, with U-shaped sections, and secured to the inner opposing faces of the uprights. The ram was caught and held in position at the highest point of its ascent by means of a pawl engaging with the teeth of a ratchet secured to one of the uprights, the pawl being ingeniously constructed so as to release at will by pulling a cord from below. This part of the apparatus, however, was soon superseded by a continuous friction brake, which was applied from one side of the machine, with its arm brackets bolted to one upright, and the brake bar of angle-iron pressing the ram in a corresponding V groove against the opposite upright. Whilst this machine fulfilled the desired conditions as to weight and portability, it did not possess the more essential property of strength and durability, and but two or three of this kind were built. The action of the brake forced the uprights and the guides apart, throwing the plunger out of line with the gun, and distorting the frame at every blow.

The next form tried was constructed largely of cast-iron. This was found to be an improvement in many respects, especially as regards rigidity; but the machine was excessively heavy and unwieldy, owing to the great amount of cast-iron used in its construction. Next the combined plan of wood and iron framing was tried again, and then the V form of guides was abandoned entirely, and a half dove-tail adopted. The experience gained by repeated failures seemed to point to the necessity of returning to a metal guide frame entirely, and the next form produced was made of McHaffie steel. The uprights were of T section, gradually diminishing in size from base to top, cast separately in about 5-ft. sections, and the ends bolted together with fish plates. The guides were made of half dove-tail section, projecting from flange face centrally, and so too dressed, as also were the ends of the section, to secure the necessary alignment. A double brake apparatus was attached, one on each side, and applied from the rear. The break arms and brackets were of steel, and bolted to web and rear flange of uprights, and the brake bars were of the usual angle iron. The uprights and guides were secured the proper distance apart by stout iron rods, fitted with jam nuts, and passing through the side bars of framing, which were of wood, and bolted to flange of uprights and to the latter, some dependence also being placed upon the dove-tail guides to assist and support each other through the gun and ram. This plan succeeded well, and several fine machines, some as large as 60 ft. high, and fitted with a steel gun of 83 in. bore, and with a 3000 lb. ram, have been put afloat and in service in different sections of the country, with good results as to efficiency and durability. The cost of the steel itself, and the somewhat difficult machine work required to fit it for use, the writer is informed, renders it still too expensive, and it is also too heavy and cumbersome.

The ram, which was of cast-iron, is provided with a plunger, upon the lower end of which is screwed a steel ring or band, and turned to neatly fit the bore of the gun below—the whole weighing 2170 lbs. The gun is of steel manufactured by the McHaffie process, and weighing 1300 lbs. It has a bore 7½ in. diameter, and 24 in. deep, pointing upward, with its mouth slightly bell-shaped to receive the ram plunger at each stroke. Its walls are 3½ in. thick at base, and the lower end is recessed to receive the head of piles. The uprights of the frame each consist of a single piece of light 9 in. channel bar of rolled iron, 42 ft. long, and weighing 50 lbs. per yard, with their flanges turned outwards, and the front flanges forming the guides, or ways, up and down which both ram and gun move. The uprights are firmly secured together, the proper distance apart, by means of angle iron cross bars, riveted to the rear flanges, and spaced 6 ft. apart. The side bars of the framing are of angle iron also, one end of each of which is bolted through its vertical flange to the inside of the web of the uprights, and to the upper flange of the cross bar through its horizontal flange, thus forming a sort of gusset stay, or brace, to stiffen the guides transversely, and the other end is bolted to the ladder, which is made of wood. The cross-head at the top of the frame, made also of light nine-inch channel iron, and secured to the uprights by angle iron brackets riveted on, carries the runner shieves and cushioning piston bolted to its upper and under sides respectively. This fixed piston fits into a corresponding bore of the ram to form an air cushion, and prevent the escape of the ram from the guides when the height of its rebound is limited, as during the first blow with long piles. The friction brake attachment, by which the ram is held in position at any point, is located (one on each side of the machine) between the flanges of the uprights, on the outer side, and consists of a brake-bar, made of very light T-iron, and brake-arms, made of the McHaffie steel, spaced 2 ft. apart, and pivoted to the studs in the web of the uprights, and is operated by a lever through a suitable link. By this arrangement of the brake it is well protected from injury while at work, the connections are short and direct, and the strains of its action are self-contained in a single part of the machine, and not transmitted from one part through others to another part, with a powerful tendency to separate them at every stroke, as heretofore.

The friction surfaces of the bar and guide are likewise effectually protected from any fouling action from the gun, which has been a source of much trouble in other machines, especially in damp weather, when the brake would not hold well. The adoption of the light T-iron brake-bar, instead of the angle iron heretofore used, affords the requisite strength with less weight, admits of a simpler and shorter pin connection with the ends of the brake arms, and thereby permits the use of as small as 9-in. channel iron for uprights; and at the same time it allows sufficient room between the flanges for the use of a 6-in. brake-arm, while the small flat friction surface has proved to be as effective as the more extended V of the angle iron. The axes of the gun and ram project 2 in. from the face of the guides, in order to give sufficient clearance to the cross bars when driving crooked piles, but this overhang has not proved detrimental to the action or efficiency of the machine in any respect. The plates of the ram, against which the brake-bar bears, are made a little thicker than those of the gun, so that the brake can be applied to the ram only, and they are also notched into the arm a little to resist the shearing strains due to the instantaneous change of motion while in operation, it having been found difficult heretofore to securely bolt anything of any magnitude to the ram. The sills of the framing are of wood, and rest upon the long rollers ordinarily used on land machines to facilitate the movement. The diagonal angle and bar iron braces are merely to give additional stiffness to the framing.

The principle of this action, and manner of operation, do not differ from the original form of construction. The only advantage or improvement claimed is in the overcoming many of the mechanical difficulties which have been in the way of producing a much lighter and cheaper machine, consistent with the requisite strength, efficiency, and durability. Ordinary rolled iron has, therefore, been largely used in its construction, it possessing all the necessary qualities afforded by McHaffie steel for this purpose at less than half its cost per pound, and with somewhat less weight. Moreover, the uprights can be made in a continuous piece, without having any joints or bolts incident to the use of cast-iron or steel in sections, and, unlike them also, the guides require no machine fitting or tool dressing, whilst its superiority over cast-iron in every essential respect is sufficiently obvious without further comment. By this plan a saving of about 25 per cent. in cost of construction is effected, as well as a reduction in weight, over the best machines hitherto made, while its operation has been most satisfactorily tested.

The machine appears to effect considerable economy, but no reliable data as to actual cost of operation has been obtained. The work has been done by contract, and the limited supply of piles to the machines did not permit their constant use without interruption scarcely for a day at a time, the force employed to operate them

having been too small to also keep them supplied with piles at the same time. Under favourable circumstances, however, as many as 81 piles have been driven in 9½ hours, and 12 in a single hour.

## GOLD MINING IN NEW ZEALAND.

One of the greatest feats of engineering skill of which the colonies can boast has been accomplished in the Thames gold mining district in the province of Auckland, New Zealand. This district is situated on the eastern shore of the Firth of the Thames, a large river, navigable to light-draught vessels for some 50 miles from its mouth. It was in the Firth of Thames, off the Turau Valley, now part of the gold field, that the great navigator, Capt. Cook, cast anchor in his good ship *Enterprise* 104 years ago; and little dreamed he or any of his stout crew how near they lay to one of those Dardos ever kept in mind and eagerly sought after by the earlier navigators of modern times. Hanraki, the native name of the district, was then numerously populated by the Maoris, and up to as late as seven years ago was but little frequented by white men, and was regarded, and with reason, as one of the strongholds of the natives who were hostile to British rule. However, a startling revolution in the sympathies of the Hanraki natives and their attitude towards the whites was created by the discovery of gold in the district in 1857, a year that will ever be regarded as memorable in the annals of the province of Auckland, then suffering from a fearful reaction consequent upon the termination of the last great native war, and the withdrawal of troops from the province. The gold field proved a very haven of refuge to hundreds upon hundreds of unemployed men of all classes who had been reduced to the verge of absolute indigence; and as the moneyed class of the City of Auckland backed the field to win, its development proceeded with rapidity, and was attended by success that the most sanguine scarcely hoped for. Line after line of auriferous lodes was opened, chief amongst which was the now celebrated Caledonian Golden Crown lode, but which then was only known as the lode that had been opened in a claim termed the Manakaw, situated on a ridge of a high spur. From the Manakaw the lode dipped into the Golden Crown, increasing in richness as it went, and subsequently was traced, still increasing in richness, into the Caledonian Mine. The strike of this lode is about north-east and south-west, and its dips to the north-west at about an angle of 45°. The water line of the lode was first reached in the Golden Crown Mine; and as it very soon became evident that a heavy body of water would have to be dealt with, preparations to meet and overcome that great obstacle to mining progress were made by the Caledonian Company erecting a 45-horse power engine, and providing a 12-in. lift that was afterwards supplemented by another of 10-in.; a winding-engine was also erected. Then the Tokey Company, whose mine was situated dead on the line of the lode, also erected a powerful winding and pumping plant; and it was hoped that by working together the two companies would be able to keep the water down. It, however, soon became evident that other and more potent means would have to be resorted to, and this led to a coalition on the part of four companies—the Golden Crown, Caledonian, Tokey, and the Imperial Crown—and to this coalition was given the name of the "United Pumping Association," the object of which was to purchase and erect a large bull-engine, not quite complete, and pumping gear then for sale in the neighbouring colony of Victoria.

The plan of operation sketched out was simple enough, being to erect the plant on a site above where the lode should lie, at a much greater depth than had been gained in either the Caledonian or Tokey Mines. The Imperial Crown Mine, next to the Tokey, was selected as the site, the estimated depth, according to the survey, at which the lode would be found right under where a main shaft had been opened by that company being 340 ft., which was at least 100 ft. deeper than where the lode lay in any part of the Caledonian Mine, and quite 200 ft. deeper than the bottom levels of the Tokey and Caledonian. Towards the middle of the year 1871 the purchase of the plant was completed, and before the year closed it had safely reached its destination. A competent engineer, Mr. William Errington, was engaged to superintend its erection, and in August of the above year he arrived at the Thames from Ballarat, where he had been located for many years. Sinking the Imperial Crown shaft by the Imperial Crown Company had been conducted to a depth of 190 ft. or thereabouts, the shaft being situated close to the coast range, which there nearly approaches the sea beach. The mouth of the shaft was certainly not much more than 20 ft. above the level of high-water mark, and hence it was feared that as sinking proceeded water from the sea might prove troublesome. Happily, however, good close country prevailed and kept the water back. Sinking the shaft so far had been accomplished by the aid of one 40-horse power engine for pumping, and a 12-horse power engine for winding, whilst a donkey-engine was used to drive the air-fans. Two 12-in. lifts dealt with the water, bat had much ado to keep it under, and were finally beaten by it. As soon as Mr. Errington took charge active preparations for the erection of the new plant were commenced. Firstly, a foundation capable of sustaining the enormous weight of the engine and pump had to be prepared, and this involved excavating around the shaft to a depth of 20 ft. to the solid rock. Material for a foundation was happily procurable from some splendid stone dykes, composed of a sort of bastard granite, that had been discovered in a locality named Hope Creek, distant about two miles from the association's works. The pressing necessity for good foundation stone led to the discovery of the dykes, and thus one noble industry gave birth to another, for the dykes are now in the hands of a stone quarrying and cutting company, and produce stone of an unexceptionable quality, that is largely in demand. In due time the foundation was built up, some of the blocks used being 2½ tons in weight, whilst the total measurement of the stone used was 26,000 cubic feet. The foundation is capped by two cylinder piers, one on each side, upon which has been built a frame of huge girders, each 30 in. square, of solid timber. And all their strength, and their solidity, is not a whit too much to sustain the superincumbent weight of the massive machinery, which would be regarded as massive even in our country, where the steam-engines assume such enormous dimensions. Of this machinery the engine may be first described as including a cylinder of 82 in. diameter, 10 ft. stroke, and weighing 13 tons, a piston-rod of 8 in. diameter, and a metallic piston. The engine is inverted, and direct action, the pump-rods being attached to the piston-rod. The admission and emission of steam to and from the cylinder are regulated by three valves, termed the steam-valve, the equilibrium valve, and the eduction valve; and these are actuated by tappet gear from plug-rods connected with the balance-beam. The engine is also fitted with steam eduction cataracts. The air-pump is 39-in. diameter and 5-ft. stroke, and is also worked from the balance-beam. Three tubular boilers, each 32 ft. long by 6½ ft. diameter, the tubes being 3½ ft. diameter, and fitted with Galloway tubes, supply steam to the engine through a steam-pipe of 18-in. diameter. The pumping-gear consists of ordinary draw-lifts and plungers, excessive size being their principal characteristic; the diameter of the column is 25 in. Each pump is constructed of from 1½ in. to 1½ in. thickness of iron, and faced on the flanges. The plunger is 24-in. diameter and 14 ft. long. The main pump spears are of blue gun timber, squared to 20 in., and in 35-feet lengths, strapped with four set plates of 9 x 1 in. iron, and 14 ft. long. The balance-bob of the pump-engine consists of the balance-beam above referred to, and which is in one piece of timber, 45 ft. long, and 30 in. by 24 in. in size, and a box of 15 tons capacity. The balance-bob oscillates upon a gudgeon of 8 in. malleable iron. Several months of costly patient labour were expended in putting together this huge fabric of mechanism, and the work at length came to an end, when the finishing touches were given to a handsome house that covers the engine and shaft. Excepting the cylinder, which was made by Leigh, of Patricroft, near Manchester, the engine and pumping-gear are of colonial manufacture. The pumps were made at the Union Foundry, Ballarat, and the air-pump and condenser were made by Langlands and Company, of Melbourne, Victoria. The other parts of the gear were turned out in truly creditable style by ironfounders of Auckland and the Thames.

As soon as the engine was in working order sinking the shaft was resumed, and continued until a depth of 400 ft. had been gained, |

In the meantime the object in view—tapping the lode and draining the Caledonian and Tokey Mines—was accomplished. A short description of the shaft may, perhaps, not be uninteresting to our readers. Sunk 400 ft. deep, it is divided into two sections, of which the first extends from the surface to 220 ft. level, where the first plunger is fixed, and the second from the 220 ft. level to the 400 ft. level, where preparations to fix a second plunger are now in progress. The size of the shaft from the surface to 180 ft. down is—length, 11½ ft.; breadth, 6½ ft., these measurements being in the clear; and hence the excavation made was much larger to provide room for the frames and piles of which the shaft is built. The frames are placed 3 ft. 6 in. apart, and are composed of timber, varying between 9 in. and 18 in. square, according to the character of the stratum of country to be supported. At every 30 ft. the shaft is strengthened by sets of massive bearers of timber, hewn to 30 in. by 24 in., and let deeply into the solid country. To these bearers the frames are hung by 1½ in. iron bolts at the corners, nine frames to each bearer.

From the 180 ft. the size of the shaft gradually increases to make room for the plunger work, until it is 20 ft. long by 10 ft. wide at 220 ft., where the first plunger is fixed in its chamber. This chamber is about 20 ft. high, and is built of huge balks of timber, and spanned by five girders, each 4 ft. wide by 2 ft. thick, three above and two below, and bolted together into solid pieces. The upper girders support the pump column, whilst those near the floor of the chamber constitute a foundation for the plunger work, which weighs 26 tons, exclusive of the cistern, and that is 8 ft. square, is built of timber braced with iron, and is bedded on the solid country of the chamber floor. The second section of the shaft is a *facsimile* of the first, excepting that instead of a plunger a draw-lift works in it, that kind of pump having of course to be used whilst sinking was progressing. In the course of four months this draw-lift will have been discarded for the second plunger. The latter, we may observe, is to be cast at one of the local foundries, that of Messrs. Price Brothers. Its dimensions will be precisely similar to those of the first plunger. The shaft is traversed by a brattice, that divides it into two compartments of unequal size, of which the smaller is the winding compartment only—one side of it, however, being devoted to that purpose, the other is pretty well occupied by a line of air boxes, reaching from the bottom of the shaft to a powerful draught-furnace built into the smoke stack of the winding-engine. The draught-furnace system of ventilating mines has been introduced with marked success in the Thames district, the deeper mines of which are deluged with carbonic acid gas. Besides the big engine the association employs three others—one of 40-horse power for winding, another of 12-horse power to pump sea water for condensing purposes—the shaft water being in great request to supply quartz-crushing mills—and a 4-horse power engine for miscellaneous purposes. These engines take steam from two Cornish boilers, and with those boilers are substantially housed under one roof. The area of the site of the association's works falls but little short of three acres, and yet there is no room to spare, every yard of ground outside the machinery being occupied by coals, wood, and other material, also by an immense reservoir for sea water, and a quartz-crushing machine with 23 heads of stamps. Work proceeds night and day, and is governed by the utmost order and precision of details, and that the management is admirable is evidenced by the fact of no serious accident having occurred to any of the employees since erecting the engine was commenced. We will conclude this article with a few facts illustrative of the ponderous character of the pumping-gear and the power of the engine. The weight of the columns is 160 tons and of the main spears 25 tons, whilst the weight of the column of water that is constantly moving upwards is 35 tons. The duty performed by the engine is equivalent to lifting 38,000,000 lbs. 1 ft. high with a consumption of 1 ewt. of coal; and considering that the coal used is not steam-jacketed, and that the coal used is very much inferior to the better sorts of English and Welsh coal, this performance is not to be found fault with. How perfectly every part of the machinery has been fitted is evidenced by the silence of its working, for excepting the roar of the water as it pours into the cisterns, and a sort of sighing as the plunger takes water, not a sound is to be heard in the shaft; whilst the clacking of the valves, and whistling inspiration of the steam-valve as it takes steam, alone disturb the stillness of the engine-room.

As near as may be arrived at approximately 50,000/ have been expended upon the United Pumping Association's undertaking, and to the question—Has this cost been merely incurred for the purpose of draining a lode? a negative reply may be given, the shaft having been sunk for the double purpose of unwatering the lode and prospecting a line of country apart from that one in which the shot of gold had been traced in the Golden Crown and Caledonian Mines. There is every probability of gold being found in it, for the country that has been penetrated is of the likeliest character, whilst the few leaders that have been met with are also very promising. The incentive to prospect—and thoroughly prospect too—the deep ground of the locality we have reported upon is supplied by the enormous yields of the Caledonian Mine, which first and last has produced over three-quarters of a million sterling of gold: 25,000 ozs. of the precious metal were taken out in the course of one short fortnight, whilst the yields for corresponding periods, before and after that particular one, fluctuated between 2000 ozs. and 18,000 ozs. After being traced to a depth of between 400 ft. and 500 ft., measured on the underlie of the lode from the outerop, the gold suddenly broke off and the present operations of the Caledonian Company are being conducted with a view to the recovery of the lost shot. The search has also been taken up from the association's shaft, where a drive is going in at the 385 ft. level towards the line of the shot, and that the latter will sooner or later be found again is considered as almost certain.—*Engineer.*

## ECHOES FROM THE MINING MARKET.

Quiétude has been the principal feature of the Mining Market during the past week. The fluctuations that have taken place in tin stocks have been of little importance, and prices may be said to have remained stationary. Shares, however, are scarce, and there is no doubt that holders are waiting for further advances in the standards. Respecting imports of the metal, it is an encouraging feature to note that they continue on a limited scale, and as the home production has sensibly decreased the chances of an early advance are certainly promising. If the movements of the tin markets depended only upon the legitimate influences of supply and demand this advance could be predicted with tolerable confidence; but it is as well not to lose sight of the fact that there has been a great amount of speculation in the metal in London, and "bears" are supposed not to have quite covered themselves yet. Some very encouraging rumours are afloat as to the future of the copper trade, and we are likely to hear of something good shortly. The present quotations are firm, and consequently copper mine shares, although not largely dealt in, generally maintain their prices. One of the first to be affected by any advance in copper would be West Tologus. This mine, which has been making some rapid strides lately, is reported to be looking uncommonly well, and a dividend of about 30s. per share is talked of at the next meeting. This, however, may be a too sanguine view of affairs. The mine throughout has improved, but the lode in the 85 ft. level west is spoken of as the most important point. Shares are decidedly scarce at 60 to 65.

Old Bottles Hill.—In about 5 ft. more driving the lode is expected to be cut here. This point is being looked forward to with great interest, as it is expected to lead to the opening up of a good course of copper. Tin dressing has already commenced, but water is reported to be rather scarce. This will be the case with all mines dependent on water supplies, as the effects of the drought are now beginning to felt.

A further fall has occurred in West Chiverton shares, which at the present moment are very much in favour of buyers. The mine is said to be looking very poor, and a call is expected. This has, probably, frightened holders. The present price is, however, very low, and can hardly represent the value of machinery.

From Prince of Wales we hear the copper lode has been struck in the 77 east. The same lode in the 65 is valued at 10/- per fathom. It is satisfactory to find the ore holding down, as it greatly enhances the value of the mine. A small sampling ore has just taken place, realising upwards of 280/-.

Foreign mine shares after rallying a little from the extreme depression of last week have again become easier, and shares are being offered. The result of the Emma adjourned meeting has apparently been only to make confusion worse confounded. According to the official advices the mine could not very well look worse, and already the question of liquidation has been freely discussed. So many elements of discord have lately been introduced that one may well nigh despair of any satisfactory solution of the difficulties being arrived at. Indeed, it is difficult to see how a wind up sooner or later can be averted. Richmond shares have been extremely flat, although the advices from the mines are not by any means discouraging. Two furnaces have made a seven days' run of \$39,000, and a third has since been started. Fuel, too, is reported to be plentiful, but somehow or other the shares droop. Probably the shareholders have not yet recovered from the effects of the late fall respecting the original price given for their property. The final meeting of the Eclipse Gold Company will be held on the 25th inst. About 2400/- is ready for distribution amongst the shareholders. JAMES H. CHAPTS.







providing machinery, buildings, and the new system of dressing-works have been 2097<sup>l</sup>, which has been added to the property account, but was provided for out of the revenue receipts.

Sierra Buttes, 2 to 2<sup>1/2</sup>. Independence, 2<sup>1/2</sup> to 3; the fourth level east has been run 10 ft. during the week; the ore continues to look well, and there will be no difficulty in running all the stamps. How extensive the shoot of pay ore is the manager cannot say at present, but there is evidently a large body of it that will yield a good profit for some time to come. Rapid progress is making in opening up this body of ore, and it will take but few more men than at present employed to furnish the mill (20 stamps) with a full supply of ore. The superintendent further states that the bottom level has been run 15 ft. east since resuming work in it, and the rock is looking better.

St. John del Rey (stock), 250 to 255; the report in anticipation of the meeting to be held on Wednesday appears in another column. With regard to the future prospects of the mine, Mr. Gordon, the manager, says—That looking at the present state of the company's plans and operations in Brazil, the fine mineral lode now partially laid open and accessible, the power provided for dealing with that mineral body, whether as regards its drainage, working, or raising to surface, the quality of ore and its gold contents, as shown by its produce in the stamping-mills, there is good reason to expect that within the period of 18 months from this time the Morro Velho Mine should give a produce of gold that will enable the company to pay as good a dividend as it has done at any period since its establishment in Minas Geraes. Don Pedro, 3 to 4 dis.; the produce for April amounted to 5100 oits., of the value of 2167<sup>l</sup>, against a cost of 2729<sup>l</sup>, leaving a loss of 571<sup>l</sup>; in April last year the produce realised 1600<sup>l</sup>, against a cost of 3645<sup>l</sup>. Rossa Grande, 1 to 2<sup>1/2</sup>; the April produce amounted to 1656 oits. of the value of 703<sup>l</sup>, against a cost of 891<sup>l</sup>, leaving a loss of 187<sup>l</sup>; the mineral treated is better than for some months past.

Great Wheal Vor, 1 to 2<sup>1/2</sup>; at the quarterly meeting on Wednesday (reported in another column) the reports stated that the whole of the machinery was drawn to surface, and would be ready for sale on or about July 7. The Chairman stated that out of 9000<sup>l</sup>—estimated value of the plant—2000<sup>l</sup> had already been realised, 3000<sup>l</sup> would be reserved for developing the western ground, and about 4000<sup>l</sup> would be offered for sale. Looking at the very slight cost to be incurred in the future laying out of this ground, probably under 200<sup>l</sup> per month, the money realised from the sale will, it is considered, be ample to drain out the water and test the lodes. The company's audited accounts, brought up to April 30, showed cash in hand and calls unpaid together amounting to 1708<sup>l</sup>. 18s. 2d., against liabilities amounting to 2971<sup>l</sup>. 0s. 6d., or a balance against the company of 1262<sup>l</sup>. 2s. 4d. At the meeting on Wednesday the accounts showed a balance against the company of only 206<sup>l</sup>, which must be considered, under all the circumstances, highly satisfactory, and it leaves the company with the value of the machinery and materials (say) 7000<sup>l</sup>, to carry on operations, less the debt of 200<sup>l</sup>. No call was, of course, made, as the company is in a perfectly sound and solvent condition, and we shall be glad to learn that the efforts of the shareholders to work the lodes in the western part of the sett are rewarded by opening up a good mine. The position of the ground is favourable, and it partakes of a promising character for the production of mineral, as the lodes parallel, both on the north as well as the south, have given enormous profits, whilst the same vein worked about 300 ft. east has paid the shareholders dividends during the last 14 years over 88,000<sup>l</sup>. Penstruthal, 12s. 6d. to 15s.; the first portion of the stamping machinery is at work, and regular sales of ore will shortly be commenced.

Van, 25 to 30; there is no change at the mine, operations both at surface and underground are progressing as usual, the various ends remaining without alteration. Van Consols, firm at 4<sup>1/2</sup> to 5<sup>1/2</sup>; there is no change in the mine since last report, otherwise than the commencement of the cross-cut to intersect the Van lode from the main shaft, about 160 ft. west of the winze, which is yielding 10 tons of lead per fathom; the lode will be reached at this point next month. Bog, 1 to 1<sup>1/2</sup>; the bottom level is slightly improved, other parts of the mine without change. The sampling this month is again increased, the agent offering 60 tons for sale. The annual meeting of the company is fixed for the 24th inst., before which date the accounts will be in the hands of the members. Pennerley, 1 to 1<sup>1/2</sup>; from the report in another column it will be seen that the mine is improving, at Potter's Pit especially. The annual meeting will be held on the 24th inst. We understand that the accounts and report will be issued before the meeting.

Russia Copper, 2<sup>1/2</sup> to 3; the directors are prepared to receive loans on mortgage debentures carrying interest at the rate of 8 per cent. per annum. At the formation of the company, mortgage debentures were issued to the amount of 30,000<sup>l</sup>, and the additional sum now offered for subscription is 40,000<sup>l</sup>, which will rank pari passu on the whole properties of the company, and immediately after the Russian mortgage of 30,000<sup>l</sup>. Up to June 30th the debentures will be allotted to shareholders only, interest will accrue from the date on which the money is received, and will be payable half-yearly.

Subjoined are the closing quotations:—

Bog, 7<sup>1/2</sup> to 12<sup>1/2</sup>; Carn Bras, 60 to 68; Cook's Kitchen, 9<sup>1/2</sup> to 10<sup>1/2</sup>; Devon Great Consols, 7<sup>1/2</sup> to 15<sup>1/2</sup>; Doleas, 46 to 48; East Cardon, 1<sup>1/2</sup> to 3<sup>1/2</sup>; East Lovell, 1<sup>1/2</sup> to 13<sup>1/2</sup>; Great Laxey, 11<sup>1/2</sup> to 12<sup>1/2</sup>; Great Wheal Vor, 3<sup>1/2</sup> to 4<sup>1/2</sup>; Hington Down, 1<sup>1/2</sup> to 1<sup>1/2</sup>; King Valley, 1<sup>1/2</sup> to 1<sup>1/2</sup>; Parys Mountain, 9 to 11<sup>1/2</sup>; Pennerley, 1 to 1<sup>1/2</sup>; Perkins Beach, 10<sup>1/2</sup> to 12<sup>1/2</sup>; Roman Gravels, 10 to 16<sup>1/2</sup>; South Conduor, 3<sup>1/2</sup> to 3<sup>1/2</sup>; Tincroft, 22 to 30<sup>1/2</sup>; Tankerville, 8<sup>1/2</sup> to 10<sup>1/2</sup>; Van, 25 to 30<sup>1/2</sup>; Van Consols, 4<sup>1/2</sup> to 5<sup>1/2</sup>; West Basset, 9<sup>1/2</sup> to 10<sup>1/2</sup>; West Chiverton, 1<sup>1/2</sup> to 2<sup>1/2</sup>; West Tankerville, 1<sup>1/2</sup> to 1<sup>1/2</sup>; Wheal Grenville, 4<sup>1/2</sup> to 5<sup>1/2</sup>; Almada and Trito, 1<sup>1/2</sup> to 2<sup>1/2</sup>; Birdseye Creek, 3<sup>1/2</sup> to 3<sup>1/2</sup>; Cape Copper, 28<sup>1/2</sup> to 29<sup>1/2</sup>; Colorado Terrible, 3<sup>1/2</sup> to 4<sup>1/2</sup>; Chontales, 1<sup>1/2</sup> to 3<sup>1/2</sup>; Do Pedro, 2<sup>1/2</sup> to 3<sup>1/2</sup> dis.; Eberhard and Aurora, 3<sup>1/2</sup> to 3<sup>1/2</sup>; Emma, 1<sup>1/2</sup> to 2<sup>1/2</sup>; Last Chance, 1<sup>1/2</sup> to 1<sup>1/2</sup>; Malpaso, 5<sup>1/2</sup> to 7<sup>1/2</sup>; Malabar, 5<sup>1/2</sup> to 7<sup>1/2</sup>; New Pacific, 7<sup>1/2</sup> to 10<sup>1/2</sup>; New Quidra, 3<sup>1/2</sup> to 3<sup>1/2</sup>; Por Phillip, 3<sup>1/2</sup> to 4<sup>1/2</sup>; Rio Tinto, 2<sup>1/2</sup> to 3<sup>1/2</sup> dis.; Do Rey, 22 to 25<sup>1/2</sup>; Sierra Buttes, 2 to 2<sup>1/2</sup>; Utah, 1<sup>1/2</sup> to 1<sup>1/2</sup>; United Mexican, 4 to 4<sup>1/2</sup>; West Esgrair Lle, 2<sup>1/2</sup> to 2<sup>1/2</sup>; Blue Tent, 6 to 5<sup>1/2</sup>; Holcombe Valley, 1 to 1<sup>1/2</sup>; New Zealand Kapanga, 4<sup>1/2</sup> to 5<sup>1/2</sup>; Cedar Creek, 2 to 2<sup>1/2</sup>.

COLLIERS AND IRON COMPANIES.—The directors of the Ebbw Vale Steel and Iron Company have issued their report, preparatory to the general meeting on Thursday at the Town Hall, Manchester. It is one of the most favourable issued by any iron company during the present year, and is by far the best presented to the shareholders since the formation of the company. Although the civil war in Spain has not only prevented the company importing from their own mines, but has led to the suspension of several other advantageous contracts for ore from Bilbao, and although the last six months have been very unfavourable for iron trading, the directors are enabled to announce that the balance-sheet shows a net profit of 321,050<sup>l</sup>. 9s. 8d. Including the dividend paid in December last, the shareholders will receive 17. 14s. 6d. per share, free of income tax, while the sum set aside for suspense outlay account will exceed 48,000<sup>l</sup>. As this item disappears the dividends will naturally increase, and the shares rise in value. The capital is divided into 75,000 shares of 32<sup>1/2</sup> each, 29<sup>1/2</sup> paid. Closing price, 24 to 25, showing a rise of 25<sup>1/2</sup> on the week. Chapel House shares are rather in demand at 4<sup>1/2</sup> to 5. West Mostyn Coal, 38s to 40s; Clee Hill, 7s to 9s.; Newport Abercarn, 3<sup>1/2</sup> to 3<sup>1/2</sup>.

The proprietors of the Bodmin and Wadebridge Railway Company held a meeting yesterday at Waterloo Station to consider a Bill which has passed the Commons entitled "An Act for Incorporating the Temple Mineral Railway." This branch will be some five miles in length, and will tap a new district lying around the hamlets of Bodmin and Temple, enormously rich in red hematite ores and chalcocite of the richest description. Some of the hematite is said to yield nearly 60 per cent. metallic iron—the theoretically possible quantity. Thorpe's Gawber Hall, 15 to 16; Omoa and Cleland, 75s. to 80s.; Whitehaven Iron, 3 to 4; Wedgwood Iron, 4 to 6; Silkstone Fall, 4 to 4<sup>1/2</sup>. The directors of John Brown and Co. have issued their report, recommending a dividend of 5 per cent., carrying forward a balance of 9833<sup>l</sup>. The 10<sup>1/2</sup> shares with 70<sup>1/2</sup> paid, stand at from 5<sup>1/2</sup> to 10<sup>1/2</sup> dis. Maribella at one time touched 105s., and close 4<sup>1/2</sup> to 5<sup>1/2</sup>; New Sharlstone, 6<sup>1/2</sup> to 5<sup>1/2</sup> dis.; Ashbury Company, 50<sup>1/2</sup> to 60<sup>1/2</sup>; Silkstone and Dodworth, 20<sup>1/2</sup> to 21<sup>1/2</sup>.

Bolckow and Vaughan Works at Eshton are still mostly idle; the A Shares have declined to 21 to 22 prem.; the Five per Cent. Preference Shares are firm at 20 to 21. The report of C. Cammell

and Co. for the year ending on April 6 shows (including 18,920<sup>l</sup>. 18s. balance from previous year) an available surplus of 132,888<sup>l</sup>. 9s. 1d. After paying the sum of 40,000<sup>l</sup>. on account of the large collieries recently acquired, and carrying forward a balance of 12,888<sup>l</sup>. 9s. 1d., the directors will recommend the payment of a dividend of 10 per cent., which absorbs 80,000<sup>l</sup>. Most of the colliery owners around Barnsley are in a very unsettled condition with their men. At the New Gawber Hall it has been announced that the 10 per cent. reduction agreed to by the Miners' Council would be accepted, but that another reduction of 10 per cent. would be enforced after a month. The horses have been drawn out of the Silkstone Colliery. Ifton Rhyn, 30s. to 40s.; Altami Colliery, 5 to 5<sup>1/2</sup>. The directors of the Dunraven Adare Coal have issued an appeal to the shareholders to surrender their coupons for the guaranteed 10 per cent.

At the Truro Ticketing, on Thursday, 1928 tons of copper ore were sold, realising 10,309<sup>l</sup>. 15s. 6d. The particulars of the sale were—Average standard, 105<sup>1/2</sup> lbs.; average produce, 7<sup>1/2</sup>; average price per ton, 57<sup>1/2</sup> lbs.; quantity of fine copper, 149 tons 9 cwt. The following are the particulars of the sales:—

Date. Tons. Standard. Produce. Per ton. Per unit. Ore copper.

May 21. 3366 ..... 2103 14 0 ..... 67<sup>1/2</sup> ..... 4 8 6 ..... 12s. 9<sup>1/2</sup>d. ..... 683 18 0

June 4. 1731 ..... 101 14 0 ..... 8 ..... 4 7 6 ..... 13 5<sup>1/2</sup> ..... 67 5 0

..... 18. 1928 ..... 105 17 0 ..... 75<sup>1/2</sup> ..... 5 7 0 ..... 13 10 ..... 69 1 0

Compared with the last sale, the advance has been in the standard 2<sup>1/2</sup> lbs., and in the price per ton of ore about 4s.

Messrs. Grant Brothers are inviting subscriptions at 102<sup>l</sup>. per cent. for 123,300<sup>l</sup>. SIX PER CENT. DEBENTURES of the CITY OF TORONTO STERLING LOAN, created in pursuance of the Special Act of Parliament of the Province of Ontario, in the Dominion of Canada, entitled "An Act to Authorise the Corporation of the City of Toronto to Construct Waterworks in the City of Toronto," and of the Special Act of the same province to amend the same. The amount authorised to be raised for the construction of the waterworks is \$1,000,000, or 226,000<sup>l</sup>. sterling. Of this sum of 102,700<sup>l</sup>. was raised under the first Act of Parliament, and the remaining sum of 123,300<sup>l</sup> is now to be issued. Both loans are equally secured by a special rate levied upon the whole assessable property of the city. The debentures are to bearer, and are for 100<sup>l</sup>. each. In the official statement of accounts issued by the city, dated March 21, 1874, the revenue of the Corporation for the fiscal year ending Dec. 31, 1873, as certified by the city auditor, amounted to \$95,419. The value of the property in the City of Toronto liable to be rated was, according to the assessment made this year, \$45,043,675, or about 9,000,000<sup>l</sup>. sterling. Similar Quebec and Ottawa loans are quoted 4 to 6 prem., and the February Toronto loan is at 103 to 105. The debentures now issuing are quoted 1<sup>1/2</sup> to 2 prem.

The YNISAWDRE COAL, COKE, AND BRICK COMPANY, with a capital of 70,000<sup>l</sup>. in shares of 10<sup>1/2</sup> each, to acquire for 45,000<sup>l</sup>. the right to work the mineral estate of the same name, in the parish of St. Bride's Minor, Glamorgan. The royalties are 10d. per ton of 2520 lbs., on an output of 40,000 tons per annum; 9d. per ton on the excess over 40,000 up to 70,000 tons; and, when an output of 70,000 tons per annum is reached, then 9d. per ton on the whole quantity. The property contains about 240 acres, of which nearly 200 are held under a lease with 53 years unexpired; it abounds in coal, iron, and fire-clay of the best description. The taking is described as a "perfect bed of coal," containing about 100 ft. of workable coal. The property has been inspected and favourably reported upon by Messrs. E. Daniel, W. Habakuk, and H. Lewis, both as to its present value and future prospects. It is estimated to contain at least 12,000,000 tons of coal which can be worked; this, at an output of 800 tons per day, would last the full term of the lease. Two pits have been sunk, and the veins intersected. The coal is of the highly bituminous class, well adapted for house, forge, and gas purposes, exceptionally free from sulphur, and from which a very superior coke is produced, specially adapted for the manufacture of steel rails. It is proposed to erect coking ovens contiguous to the pits, and a brick manufactory will soon be at work for utilising the excellent fire-clay found on the property. The prospectus will be found in another column.

The shares of the Buenos Ayres and Campana Railway Company are 75 to 15<sup>1/2</sup> prem. The Erie Railway Company announce that the coupons due on July 1 on the issue of \$10,000,000 Seven per Cent. Convertible Gold Bonds will be paid on and after that date at the office of Messrs. Bischoff-heim and Goldschmidt.

EXPORTS OF COAL.—By the Monthly Circular of Messrs. Higgins, of Liverpool, we learn that the quantity of coal exported in May was 962,992 tons, against 1,136,649 tons in the corresponding month of 1873, showing a decrease of 173,657 tons. The particulars are—From the Northern Ports, 447,028 tons; Yorkshire, 63,321 tons; London, 457 tons; Liverpool, 51,373 tons; Severn Ports, 303,772 tons; and Scotch Ports, 89,341 tons. The increase was—Yorkshire Ports, 4734; London, 80 tons; Liverpool, 5164 tons; and Scotch Ports, 24,242 tons. Decrease—Northern Ports, 145,477 tons; Severn Ports, 40,500 tons. Total exports January to May inclusive, 4,601,882 tons; corresponding period last year, 4,599,888 tons; increase in 1874, 1994 tons.

DENBIGHSHIRE CONSOLIDATED.—To ascertain the value of ore above the 112 east a rise has been started, and some solid stones of lead taken out before a foot of ground was passed. Before the meeting is held it is confidently believed that the pioneer points will be arrived at. A great rise in the price of shares is expected.

POLROSE.—We are glad to learn of the accession to the tin-bearing mines of the Brage-di-trial of another very promising adventure. Polrose Mine is situated close to Wheal Vor and Great Work, between both, and is considered to be fast approaching the time of its being placed on the Dividend List. We observe there was a sale of tin on the 12th instant—8 tons 12 cwt. 0 qrs. 25 lbs., at 54<sup>1/2</sup> lbs., producing 499<sup>l</sup>. 6s. 2d., and making 50 tons 3 cwt. 0 qrs. 15 lbs., amounting to 3147<sup>l</sup>. 8s. 9d., raised and sold within the last 12 months.

DENBIGHSHIRE CONSOLIDATED.—To ascertain the value of ore above the 112 east a rise has been started, and some solid stones of lead taken out before a foot of ground was passed. Before the meeting is held it is confidently believed that the pioneer points will be arrived at. A great rise in the price of shares is expected.

WANTED, a PRACTICAL QUARRY MANAGER.—One who has been accustomed to Whinstone preferred. Address, Mr. JAMES H. CROFTS, 1, Finch-lane, London, E.C.

WANTED, in LONDON, an EXPERIENCED CLERK, POSSESSING A GOOD KNOWLEDGE OF THE IRON and METAL BUSINESS. Must have a connection amongst shippers and consumers.

Address, stating full particulars, to "T. S." care of Davies and Co., Advertising Agents, Finch-lane, Cornhill.

GROGWYNION LEAD MINE.—WANTED TO BUY, for immediate cash, ONE HUNDRED to TWO HUNDRED FULLY PAID SHARES.

Persons desirous of selling should state lowest price, and number for sale, to Mr. HATEFIELD, 31, Montague-road, Dalston.

WANTED, from 2000 to 3000 yards of NEW or SECOND-HAND BRIDGE RAILS, from 18 to 20 lbs. per yard.

Also a lot of SLATE QUARRY RUBBISH WAGONS, 2 ft. guage; and THREE WEIGHING MACHINES, to weigh 3 to 4 tons.

Address, with full particulars, and lowest cash prices, to Mr. WHITE, Menai View, Carnarvon.

A MINING ENGINEER is OPEN for an ENGAGEMENT to INSPECT and REPORT on MINING PROPERTIES ABROAD, or to TAKE MANAGEMENT. Many years in Spain and Portugal. Speaks Spanish. Thoroughly acquainted with machinery. References unexceptionable. Address, "F. H.," 8, Great Winchester-street-buildings, E.C.

A GENTLEMAN, possessing a thorough knowledge of COAL and METALLURGICAL MINING and METALLURGY, is prepared to UNDERTAKE HOME or FOREIGN EXPLORATIONS, or to ADVISE CONFIDENTIALLY on MINING SPECULATIONS.

Address, "M. E." care of Davies and Co., Advertising Agents, 1, Finch-lane, Cornhill, London.

RAILS FOR SALE, in great variety of sections (perfect, slightly defective, and second-hand), 14 to 82 lbs. per yard. Also CHAIRS and the other NECESSARY FITTINGS.

Apply to BEELEY, RICHARDSON, and Co., Newcastle-on-Tyne.

## ORES, &c.

I BUY at the highest prices:—

LEAD ORES.—LEAD-SILVER ORES.—SILVER-LEAD ORES.

SILVER-LEAD.—HARD LEAD.—ANTIMONIAL LEAD.

ZINC AND LEAD ORES MIXED TOGETHER.

## NOTICES TO CORRESPONDENTS.

\*\* Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be *fixed* on receipt; it then forms an accumulating useful work of reference.

SWANSEA VALLEY STEAM COLLIERIES COMPANY.—I thank you very much for the publicity given to a letter from "A Shareholder" in this company on May 22, because it enables me to ask your correspondent whether he holds shares in either of the other colliery companies brought out at the same office, and whether he can inform me when I, a shareholder, may expect a dividend?—ANOTHER SHAREHOLDER.

BROXFLOYD MINE.—May I ask, through the Journal, when any lead was sold by this company? The rates used to be reported some years ago, and we hear some times of a few tons of lead going over the wire tramway to the stores at Cwmtaf. I wish the managing director would give us some useful information in addition to the reports the agent sends up, so that we can form some idea of the progress of the company.—A SHAREHOLDER.

TANKERVILLE AND PENNERLEY.—I notice correspondents referring to these mines in the Journal of the last two weeks, from which I presume they are not as quenched with their position exactly. It is a fact the latter mine is improving, and their last sampling of 80 tons might have been 100 tons without using any extra effort, but the future is being considered. The mine is not being worked from hand to mouth, but is being placed on the track of permanency, which is creditable to the present able manager. More attention will be paid to Pennerley at no distant date. I have no interest in Tankerville, but shall content myself with watching the result of both mines compared in a few months hence.—ANOTHER SUBSCRIBER.

ECLIPSE MINE.—We could not insert the letter from Capt. Thomas Faull, dated New Almaden, May 25. The matters referred to can be better arranged by communicating with the parties named than by publication.

MINERS' LAMPS.—I am in want of the addresses of makers of miners' lamps. Can any of your readers supply me with the address of the manufacturer of Holmes's self-lighting inextinguishable lamp? It is represented as a very simple arrangement, being a tin box filled with pieces of phosphide of calcium, supplied with a float to swim in the water. I wish to know if it has been used for any purpose, but a signal or danger lamp, such as to light up stations, or for hand lamps.—MINERS' LAMPS.

QUOTATIONS FOR MINE SHARES.—We have frequently stated that, with regard to the quotations of many mine shares, it would be impossible to sell them at the quotations given in the Share List—or, indeed, to effect a sale at any price whatever in the market; yet, as the transactions are vouchered for as having taken place, we are bound to record the prices as business done. It should be understood, however, that the prices are only those obtained by the promoters or others to a similar position from the public.

Received,—"J. B."—"E. M. E."—"Reader" (Bristol)—"A. R. D."—"The Glasgow Caradon Consols Mine, St. Cleer, Liskeard"—"H. G."—"G. H. P."—"J. C. B." (France) had better employ a solicitor—"Shareholder" (United Bituminous Colliery)—"B." (Leeds).

SCALE FOR ADVERTISEMENTS.—Our charge for general advertisements is—for six lines and under, 4s.; per line afterwards, 8d. Average, 12 words per line.

SHARE DEALING.—We never interfere in the sale or purchase of shares; neither do we recommend any particular mine for investment or speculation, or broker through whom business should be transacted. The addresses of most of the latter appear in our advertising columns.

AMERICAN SUBSCRIBERS.—In reply to several enquiries, it may be stated that subscribers in the United States can be supplied with the *Mining Journal*, post free, at the price of \$8 50c. gold per annum, payable in advance, by remitting to Mr. D. Van Nostrand, publisher, and importer of scientific books, &c., Murray-street, New York; or, direct to our Office, 26, Fleet-street, E.C.

THE MINING JOURNAL,  
Railway and Commercial Gazette.

LONDON, JUNE 20, 1874.

## THE MINERS' NATIONAL ASSOCIATION, &amp;c.

The wages question in the coal trade seems to have had the effect of not only decreasing the popularity of the miners' leaders, but of some of the great associations as well. Of this there was unmistakable evidence in the proceedings which took place at the meeting of the council of the Miners' National Association at Manchester. The president, Mr. MACDONALD, M.P., in the course of his opening address, said charges had been brought against him for not calling a meeting of the council some time since for the purpose of considering the case of the men now on strike in South Staffordshire, with a view to assisting them in their struggle. Those who preferred such a charge did so evidently in ignorance of the constitution of the Association, from which it appears that the council has no power whatever to make a levy for the support of the men now on strike. In that respect the National differs in every way from the Amalgamated, over whose destinies Mr. HALLIDAY presides. That body directly supports and manages strikes and everything that relates to them, as well as the rates of remuneration which its members must accept. On the other hand, the National is a confederation of associations, with objects in common, the representatives of which meet for deliberating and consulting together on all subjects in which the miners are interested, and influencing legislation in their behalf. The business transacted at the meeting at Manchester related principally to the altered state of the coal trade, and the strikes now prevailing in several districts. It was stated that the Association was powerless to make a levy in aid of those who were on strike, whilst the income of one halfpenny per member was just sufficient for the ordinary expenses. Mr. BRITAIN, of South Staffordshire, remarked that some of the members in his district considered that their case was one of a lock-out, and had doubted whether he had paid the usual levies to the National, because the latter had not supported them. The position of the Cleveland ironstone miners was also considered, with a view of determining the best means for bringing the strike to a close; and for that purpose Mr. BURR, M.P., and Mr. P. CASEY, of South Yorkshire, were deputed to visit the district, and endeavour to bring the dispute to a close. This will be a much easier matter now than it would have been a month ago, seeing that the deputation sent to the council to seek pecuniary assistance were informed that the Association considered the stoppage of work to be a strike on the part of the men, and not a lock-out by the masters, so that they could not recommend help under such circumstances. The funds of the Cleveland Association, too, were all but exhausted, whilst the response made to an appeal issued two or three weeks since to other societies of working men was most discouraging. The time is, consequently, most opportune for effecting an arrangement.

Both Mr. BURR and Mr. CASEY have had a good deal of experience in conducting negotiations in connection with wages questions, are well acquainted with the actual position of the coal and iron trades at the present time, and it is, therefore, to be hoped they will be successful in persuading the men to resume work, which they certainly had no substantial ground for leaving. To prolong the struggle any longer would be worse than folly, for it could only result in bringing a great deal of misery and distress into hundreds of families in the Cleveland district, which but a few weeks ago were prosperous and happy. That a reduction of wages in connection with the coal and iron trades could not be contended against was pointed out by Mr. MACDONALD and other speakers, and it is to be hoped that the advice given on the subject will be appreciated by the thousands of miners who are now under notice in the Yorkshire and other colliery districts. Since the meeting in Manchester Mr. MACDONALD appears to have been visiting the miners in Scotland, and in alluding to the Labour Commission, of which he is a member, he makes what we cannot but consider as a startling and really sensational statement. He said that the Commission now sitting "would bring to light things which would astonish even the dullest, and which would result in the destruction of the system of an unpaid magistrate, and lead to the appointment of men who by their experience, their independence, and impartiality would be able to deal justly in questions between employers and employed." This, indeed, would be a sweeping change for the two Houses of Parliament to agree to. That in many districts the decision of a stipendiary magistrate would be more satisfactory in those matters in which workmen appear as defendants than those given by gentlemen of unimpeachable integrity, who, however desirous of deciding strictly according to the law, have not had that training essential to the mastering of abstruse legal points, we know full well. Still, to effect such a great alteration in the administration of justice

there must have been evidence of a very astonishing character. We shall, therefore, look forward with deep interest to the issuing of the report of the Commission to see the grounds which require such a great change as that mentioned by Mr. MACDONALD necessary.

## OUR COAL EXPORTS.

Our coal exports have exhibited, upon the whole, no material variation this year. Up to the close of April they presented a rather respectable advance, but in May they received to 1,108,632 tons, against 1,241,942 tons in May, 1873, and 1,275,321 tons in May, 1872. For the five months ending May 31 this year they stood at 5,084,401 tons, while in the corresponding period of 1873 they did not exceed 4,956,298 tons, albeit that in the corresponding period of 1872 they had attained an aggregate of 5,328,013 tons. The demand on German account presented some improvement in May; but, on the other hand, there was a sharp decline in the exports to France, which received for the month to 161,956 tons, as compared with 211,003 tons in May, 1873, and 181,237 tons in May, 1872. Our exports of coal to France have been rather materially curtailed this year, having declined in the five months ending May 31 to 946,405 tons, as compared with 981,654 tons in the corresponding period of 1873, and 1,055,891 tons in the corresponding period of 1872. The development of new French workings and the dulness of French commercial affairs this year are probably the causes of the falling-off thus indicated in the French demand for our coal. Certainly, the exertions which have been made to develop the extraction of coal in the Nord and the Pas-de-Calais ought by this time to have produced some result, and probably this has been the case: at the same time, account ought also to be taken, we fancy, of the stagnation which has prevailed during the last few months in the great French industrial centres, a stagnation which has not yet been wholly removed, although it appears to have been mitigated to some extent. A sensible increase must be noted in the exports of our coal to Germany, which amounted, to May 31 this year, to 672,555 tons, against 551,508 tons in the corresponding period of 1873, and 691,461 tons in the corresponding period of 1872. It will be seen that there has been a marked advance in this year's shipments, but it is difficult to indicate to what precise cause this advance is to be attributed. This year's exports to Germany appear likely to attain an aggregate of from 1,250,000 tons to 1,500,000 tons. Those to France, although somewhat reduced, will also probably exceed 2,000,000 tons in 1873, an aggregate which would have been considered a very extraordinary one 20 years since, when the French grumbled a good deal at having to take (say) 1,000,000 tons of coal annually from Great Britain. It is easy enough to see why France finds it necessary to make such very considerable importations of English coal; even now the coal production of France falls very far short of the quantity of coal which the French, even in comparatively dull times, consume every year. But the case is different with Germany. Germany sends coal with some freedom to France, to Belgium, and to her other neighbours, and yet she is fain to import English coal to the extent of at least 1,250,000 tons per annum. We have been sending considerably more coal this year to Sweden and Norway, and the same may be said to some extent of our shipments to Denmark. To Spain and Italy our coal exports have remained almost stationary this year, but they have shown a marked progress as regards Egypt, a country which is making considerable efforts to participate in what grandiloquent French writers term the great industrial movement of the 19th century. It may be interesting to note the precise extent of our exports of coal to Egypt to May 31 this year; they amounted in that period to 267,641 tons, against 248,855 tons in the corresponding five months of 1873, and 181,800 tons in the corresponding five months of 1872. The increase which has taken place has thus continued from year to year, and even in May it was still proceeding.

Altogether, including 1,222,307 tons of coal shipped for the use of steamers engaged in the foreign trade, we sent abroad 2,306,708 tons of coal to May 31, this year, or 1,261,342 tons per month. At this rate, our coal shipments for the whole year will be 15,136,104 tons, or nearly 15 per cent. of the whole extraction of black diamonds effected annually from the British soil. Some writers on the subject have contended that, having regard to the present great dearth of coal, this shipment of 15 per cent. of our annual extraction ought to be discountenanced, discouraged, and even prohibited. It is clear, however, that a shipment of 15 per cent. of our coal production to foreign countries, although it may aggravate scarcity and consequent dearth, cannot wholly have created it. What has made coal dear is, after all, the persistent continual growth in the home demand, which has for the time outstripped all calculations, although it may soon be again overtaken by the great efforts which have been made in the course of the last two years to extend production in England and Scotland. Meanwhile, we are again piling up heavy figures this year as regards the value of the coal exported from our shores. Setting aside coal shipped for the use of steamers engaged in the foreign trade, and confining ourselves solely to the shipments made to foreign customers and the colonies, we find that the 5,804,401 tons exported to May 31, this year, were valued at 4,892,206. The corresponding value of 5,338,013 tons of coal exported to May 31, this year, was 3,212,283. The coal exported this year has thus been worth nearly 20s. per ton, while the corresponding value in the first five months of 1872 was only about 12s. per ton. However, in the first five months of 1873 it was nearly 21s. per ton.

EXPORTS OF RAILWAY IRON.—The exports of railway iron from the United Kingdom exhibited some progress in May, having amounted in that month to 97,557 tons, as compared with 85,975 tons in May, 1873, and 87,617 tons in May, 1872. In these totals Russia figured for 26,522 tons, 16,274 tons, and 9,276 tons respectively; and the United States for 10,097 tons, 20,857 tons, and 40,840 tons respectively. In the five months ending May 31 this year railway iron was exported to the extent of 335,093 tons, as compared with 274,975 tons in the corresponding period of 1873, and 336,878 tons in the corresponding period of 1872. In these totals the exports to Russia figured for 49,258 tons, 33,318 tons, and 13,153 tons respectively; and those to the United States for 52,445 tons, 102,452 tons, and 221,033 tons respectively. The exports have increased this year to Russia, Sweden and Norway, Spain, Italy, Egypt, Brazil, Chili, British America, British India, and Australia; but they have decreased to Germany, Holland, Belgium, France, the Austrian Territories, the United States, the Spanish West Indies, and Peru. The value of the railway iron exported in May was 1,245,909l., as compared with 1,108,272l. in May, 1873, and 899,011l. in May, 1872; and in the five months ending May 31 this year 4,383,371l. as compared with 3,624,419l. in the corresponding period of 1873, and 3,544,487l. in the corresponding period of 1872.

MINING IN GERMANY.—A very large extension of Government mining works is reported by the *Berlin Boersen Zeitung* to be taken in hand in the Saarbrück coal fields. The plans have been elaborated under the immediate superintendence of the Chief Inspector of Mines, M. Krug von Nidda.

MINING IN TURKEY.—According to an official report just received from Bosna Terai, we learn that the serious project of the construction of a railway through Bosna has had the effect of immediately calling attention to the great mineral wealth of that province. Two gentlemen lately arrived there—Messrs. Sigh and Faulkner—the first of whom is the manager of a large Austrian firm of machine manufacturers, and they made certain proposals for the concession to them of all the mines of coal, lead, copper, and iron which they might discover within 30 miles of the proposed line of railway. Accompanying them were several competent mining engineers, who selected some 32 different localities as rich in these various ores. They also declared, after sufficient inspection, that the whole valley of the Bosna was one large coal field. The concession of all the required localities has been applied for, and negotiations with the Porte, which have been prolonged up to the present, are now said to be in a fair way of ending in a satisfactory conclusion. It is stated on behalf of the proposed concessionaires that they have some 20,000,000 ft. of their deposit, and on obtaining the concessions they demand can raise any further amount of capital which they may consider necessary. It is stated that a member of the firm of Messrs. Sigh's visited England in connection with the business. The object proposed is to work all the mines within reach of the railway, and also to establish a manufactory of steam-engines and rolling stock of all kinds for the use of the railway, as well as to supply it with coal on the spot. Very reasonably is the opinion expressed that if those projects are carried out the country and the Government will derive an immense advantage from them, and the Porte will be wise to encourage them by all practicable means. It is stated

also that the concession of the Cinnabar Mines of Mount Imatch has lapsed, as the within the prescribed time to work them. A report which was circulated that out found out, and it is also mentioned that recently an agent was sent to London to endeavour to place the affair here, apparently without success.

IRON IN GREECE.—According to an official report from Syria, a considerable quantity of iron ore has been shipped from the Island of Scopias for England, by the Hellenic Mining Company. The first shipment was made in 1872, and up to the end of October last seven steamers had traded about 8000 tons of this ore for Scopias, where it is said to have been successfully smelted at the Royal Greek Iron Works, erected near that town, and to have given 61 per cent. of excellent iron. The quality of the Scopias iron is said to be equal, or superior, to the best Swedish or Spanish ores. A consignment of about 5000 tons has been shipped from Scopias for Konstantinopoli, in order to make the arrangement of smelting it with the iron found at that place. Several other mining companies have been formed in Greece lately, and to them, as well as to private individuals, concessions have been granted by the Government for working the various minerals found in the district of Cyclades, but as yet no works of any importance have been established.

THE LATE PROFESSOR SEDGWICK.—Subscriptions are now being raised for the purpose of commemorating the memory of the late Prof. Sedgwick, 11,000l. have been subscribed, of which His Grace the Duke of Devonshire, as Chancellor of the University of Cambridge, has given 1000l. It is proposed to erect a statue in a suitable part of Cambridge, with which the late Professor has been so intimately associated, and where he laboured so successfully. It is also proposed to erect a commodious and suitable building for holding the valuable and magnificent collection accumulated in a great measure by the untiring exertions of Prof. Sedgwick, and to contain the additions which are constantly being made to it so as to make it worthy not only of the great man to whose memory it has been raised, but also of the town of Cambridge, and in a style worthy of the name it will hereafter be associated with. It is estimated that the sum required for carrying out the views of the committee will be about 20,000l., and there is no doubt but that amount will be raised, through the exertions of old and present Cantab, and the numerous admirers of the late learned and esteemed Professor.

## A NEW METHOD OF MINING.

We last week referred to the fact of Mr. Emmens having taken up several mines in the Callington district with a view of introducing new methods of dealing with low-class ores; and as the subject is one which materially affects mining interest generally, not only throughout Cornwall but in every mineral district of the world, we have endeavoured to obtain some detailed information upon the point.

It appears that on Mr. Emmens first visiting the neighbourhood of Calstock and Callington, some two years ago, his attention as a geologist was struck by the exceptionally favourable features which the flanks of the granite outcrops of Kit Hill and Hingston Down present from a mining point of view, scanned as they are by mineral lodes and cross-courses in a congenital country rock of killas, passing at no great depth into what may be termed a metamorphic stratum of granite, syenite, porphyry, &c. His investigation of the remarkable deposits of fire-clay which occur in this neighbourhood also led him to examine the elvan dykes that are found there, and these he discovered to be accompanied in the proximity of the lodes by indications of both silver and gold, a result which was confirmed by subsequent assays.

Struck by these facts, he proceeded to enquire into the reason why so rich a district was neglected by miners, and why mines that had once been worked on the slopes and in the valleys round Kit Hill and Hingston Down were for the most part abandoned. The cause he soon found to consist in the ordinary system of mining having been adopted—i.e., that the lodes had been wrought upon simply for courses and shoots of ore containing a high percentage of some particular metal, a system evidently unfitted for the development of a metamorphic district, where lodes must necessarily be impregnated more or less throughout their whole extent with a mixture of metallic ores, and where any one ore in an isolated form could only be expected to occur at rare intervals, a remark which applies not only to the neighbourhood of Callington but to most metalliferous districts. Mr. Emmens, moreover, ascertained that in the search after rich ore extensive workings had been laid open in the majority of the lodes of the district, and that the so-called "unproductive" levels were in reality driven through large masses of mineral containing gold, silver, copper, zinc, tin, arsenic, and sulphur in quantities too small to render the extraction of any one element profitable, but amply sufficient to yield a handsome profit if all or the greater portion were separated; and a further important feature consisted in the extensive burrows or waste heaps which were to be found in all directions outside the abandoned mines, and which were for the most part composed of the mixed minerals thus alluded to.

It thus became evident that if a suitable method could be devised for treating such "low-class" ores, and extracting the whole of the merchantable products they contain, mining might be made to lose its speculative character, and to yield regular and remunerative returns. Each lode would, in fact, simply become a *mineral quarry*, and could be worked in a much more simple and efficient manner than is possible under the old system, while from the whole of the lode being removed *every rich bunch or shoot that it contains must necessarily be discovered*, instead of being passed by unperceived, as is so constantly the case under the present system of hurying through the so-called "unproductive" ground with a minimum of exploration. Accordingly, this new mode of mining gives an assurance of rich "finds" from time to time, and of sure dividends in the interim. The chemical treatment of the ores in question in a economical manner was found feasible by the simple employment of a reagent, which Mr. Emmens informs us is usually found in the vicinity of metalliferous lodes in metamorphic foundations, as though it had been placed there by the hand of Providence for the purpose of enabling mixed and poor ores to be successfully dealt with. He thereupon commenced the erection of extensive works upon the premises of the West of England Fire-Clay, Bitumen, and Chemical Company (Limited), at Hingston Down, and by this time the works in question are so far finished as to be partially in operation, while by the end of July, or the beginning of August, it is expected that the whole of the process, from the crushing of the raw ores to the final casting of ingots of gold, silver, copper, &c., will be in full activity.

While, however, Mr. Emmens was thus engaged other attempts were made to accomplish somewhat similar results, and Mr. Barnard, at Harrowbarrow, on the southern side of Hingston Down, erected a small apparatus for the treatment of low-class silver and copper ores, by an improved method of chloridisation and precipitation. Finding that this was proving successful he brought the matter under the notice of Mr. Emmens, who, after carefully investigating the process, was so satisfied of its novelty and efficiency, and of its capability of being profitably worked in conjunction with his own method, that he agreed to become the proprietor of a patent for securing the same, and to work it in conjunction with his own method at the West of England works.

Thus is inaugurated a new era of mining, and the "Nascent copper" process will be eagerly welcomed both at home and abroad wherever poor copper and silver ores are found. Already at the New Great Consols Mine copper and silver are being extracted literally *by the ton* from huge heaps of wastes similar to those which cumber the ground outside every tin-dressing floor through Cornwall. At Wheal Newton, too (one of Mr. Emmens's mines), like results may be seen proceeding from the treatment by the Nascent copper process of ores, with which not many years ago the roads of the district were mended; whilst at Kelly Bray, which Mr. Emmens has commenced to work on the system of removing low-class as well as rich stuff, the indirect benefits above alluded to have been already exemplified in the shape of several valuable discoveries of ore containing very high percentages of copper and silver.

It is clear, therefore, that a revival of prosperity is at hand for the mines of Cornwall, and that by means of the "Nascent copper" process dividends may be earned by small mines, and fortunes by large ones. We are informed that the cost of the process is so small as to render possible the profitable treatment of ores containing even so little as 1 per cent. of copper, or 4 oz. of silver. In the case, then, of ores containing half as much again of these metals, or—in other words, in the case of hundreds of thousands of tons of waste ores which are now lying at surface in every part of the country—very large gains must result; and as this means not only

a solace to the minds and pockets of mining shareholders, but also substantial comfort and prosperity for the miners and merchants, we think all classes will unite with us in wishing well to the new system of mining and its founders.

#### BLASTING WITH DYNAMITE EXPLODED BY ELECTRICITY, IN DEAN FOREST.

A report of some blasting operations at a carboniferous limestone quarry, in the Forest of Dean, which appeared in the *Mining Journal* of May 23, has excited a good deal of interest among miners, engineers, contractors, and others engaged in such matters. These operations were carried out for the purpose of practically testing the applicability to the quarrying of stone (for either building or burning into lime) of a method of blasting, the prominent feature of which is to explode simultaneously, by electricity, a number of small charges of dynamite, and were highly successful.

We now record particulars of another trial of the method made at the same place, but on a much larger scale, a few days ago. As at the first occasion Mr. W. Brain, of Cinderford, directed the proceedings, which were witnessed by Mr. Fitzmaurice, manager of the Wigpool Iron Mines; Mr. Phillips, manager of the Dowlais Iron Mines; Mr. C. C. Brain, of Trafalgar Colliery; Mr. Cooper, of Wigpool; Dr. Heane, Cinderford; Messrs. Wintle and Meek, Mitcheldean; and many miners and others from the immediate locality.

The mass of stone to be operated upon formed a "ledge," or "shelf," some 30 ft. above the floor of the quarry, about 10 ft. wide and 60 to 70 ft. long. On the ledge, and close to the vertical face of the rock, which rises 40 ft. above it, 11 bore-holes, to contain the explosive charges, were bored; they were  $1\frac{1}{2}$  in. in diameter, about 5 to 6 in. apart, and varied in depth from 5 to 6 feet; these were charged with dynamite, the aggregate quantity used having been 16 lbs., the deeper holes receiving a larger allowance than the others. Eleven of Brain's high-tension detonating fuses were applied, and the whole of them connected in one circuit. This was a departure from ordinary practice, as they should have been connected in two branches, of 5 and 6 respectively, a plan that would have increased the conducting area, and consequently reduced the resistance and diminished the risk of small imperfections in the insulation. But as Mr. Brain had, prior to leaving his own works in the morning, experimentally exploded 15 fuses in one circuit, it was determined in this instance to have a practical test of a larger circuit than usual and no doubt, is entertained that it would have been successful but for a little mishap hereafter explained. The connecting wires between the charges were "22 insulated to 16 gutta percha," which is very slight, but ample sufficient if handled carefully. On the hill above the quarry, and at a suitable distance from its verge, a man with the dynamo-electric mine exploder was stationed, the instrument being connected with the bore-hole charges by two insulated wires carried down the face of the rock. Everything being ready, the firing signal was given, two rapid turns of the handle of the exploder were made, and an explosion instantly followed. Experienced men, however, quickly conjectured that all the charges had not gone off, and on examination it was found that owing to a slight defect in the insulation, where some wires had been joined, only 6 out of the 11 had been exploded, producing a fracture the whole length of the ledge of rock, and several feet in depth. The five charges remaining were speedily re-connected with the exploder, and in a few minutes a second explosion was effected. An enormous mass of stone, from 60 to 70 feet long,  $10\frac{1}{2}$  ft. wide, and 8 ft. deep, estimated to weigh nearly 400 tons, was now seen to have been dislodged and heaved out 2 to 3 feet from the main rock, with lateral fractures subdividing into huge pieces of from 30 to 40 tons weight and upwards. Very little pulverisation or smashing was observable, that was in the vicinity of the bore-holes.

Although the immense results thus achieved astonished the spectators, and were acknowledged by those acquainted with mining and quarrying to have greatly exceeded their expectations, it is quite certain that had the 11 charges exploded simultaneously the dislodgment of stone would have been more considerable, in all probability nearly double the weight.

Subsequently, at another part of the quarry, two bore-holes, 5 ft. apart, 4 and 3 ft. deep, and charged with 2 lbs. of dynamite, were exploded, and dislodged a block of stone 20 ft. long, 10 ft. deep, 5 ft. wide, weighing by estimation about 70 tons. With extraordinary results of this character it will be seen that this newer method of firing the valuable explosive is an important discovery, the advantages thus accruing in mining operations altogether being of an incalculable degree.

#### TRADE AND LABOUR IN DEAN FOREST.

June 17.—The present state of trade is one of dulness, and has been more or less in that condition for some time past. Many of the collieries are working only about half-time, the reason given for such slackness being want of orders in the coal market.

Some, however, attribute it almost entirely to a determination on the part of the coalmasters to keep up the price at such figures that merchants are only disposed to buy just what will barely keep up a connection with their customers, and mention instances where parties have been anxious to purchase but could not obtain the articles. On the other hand, proprietors affirm that the cost of production has been so much enhanced by the rise in the price of all materials used at pits, and of the daymen's wages, that they really cannot afford to sell coal at anything like the prices which were formerly current in Dean Forest. We believe that there is some truth in this averment on the part of coalowners, though not to the extent as they wish it to be inferred, for it cannot be denied that the proprietors have been making large aggregated profits, as we may mention, by way of illustration and proof, that one firm realised during last year 38,000/., and another 60,000/., profits upon coal; so there is no need of proprietors squeaking on the ground of profits, notwithstanding that the cost of production is considerably increased by the circumstances already specified or referred to. It being pretty clear, then, that proprietors are in the opposite condition of being "hard up," it is thought by many that they might afford more fully to compete with prices submitted to in other districts, so as to promote activity in the trade at the Forest pits, and in that way keep their men more fully employed, and through that the men's families provided for in food and other necessities more adequately than is at present the case.

As the working colliers are partly instrumental in enabling the proprietors to amass princely wealth, it does not appear to be opposed to reason or equity to consider their interests and family necessities, even at some disadvantage, by submitting to less profits in times of comparative dull trade, rather than that their men should be unduly pinched. On the part of the men, it may be said that they are greatly indebted to capitalists who invest in mineral property, and in that way provide labour for the masses by which they live. There can be no doubt that they are mutually indebted to each other, although at times neither party is willing to own it. The tendency of the times seems to be that each side is determined to push its claims to the utmost—capital to bear hard upon toil, and toilers, if possible, to control capital and the public market. The Unionists have tried it in this way in this district, although with limited success. To control the market and keep up prices they have proposed to limit the output of coal, but which the masters have never favourably entertained during the inflow of orders, although we have heard of one or two looking favourably that way since prices declined in the late spring; but in the adoption of the eight-hours system of labour it has been found that in cutting time off the period for labour proportionately reduced the output of coal in the Forest, and most likely the adoption of the system elsewhere has acted in the same way, which would so far account for the running up of the price of coal after the spread of Unionism amongst colliers and miners, though undoubtedly it was partly attributable also to other causes, especially the general prosperity of trade.

It seems very strange that a society organised to check and put down tyranny should itself attempt to play the tyrant; but so it has been, the Forest Union, by its agent, having tried to induce the coal proprietors not to employ any men not in the Union. If such a system were introduced where would old English liberty be? To our

minds men should be under no pressure or constraint in such a case, except that of argument or interest. They should join a Union or let it alone, as may seem best to themselves, and not at the coercive dictation of others. Is the Union's power waning, that the coercive power of the masters is sought? Unionism to a given extent, no doubt, is good, but when it seeks its ends by tyrannical and unjust means it then ceases to be a good, and becomes an evil. It may be purchased at too high a price, and may cease to command itself for want of sufficient wisdom and integrity in the application of means in carrying it on. For want of the elements just named its funds may be largely wasted, or more than questionably applied. We have heard of parties in receipt of good wages who, under pretence of deficient income, have squandered upon its treasury, and favouritism is also charged upon its administration. How far these accusations are true we have not the means of saying, but those who make them are members of the Union, and therefore may be supposed to be pretty well informed, or ought to be, on the matters of which they speak. Some belonging to the Union assert that it has cost 1400/ to establish it. Such a sum ought to benefit the members by its expenditure, or it has been spent in vain. The Union deserves praise for paying those whom it employs liberally, supposing that it is for value received; but many doubt this, and others more than doubt it, and declare that much of the money is wasted by being unwisely employed. We pronounce no judgment either way, but certainly consider that the members themselves should see to it that the funds which they furnish should be made a good use of.

We have only just time and room to state, in concluding this communication, that the recent high price of coal, and its prospective rise again in the autumn (as some believe), has induced a considerable sprinkling of small proprietors to open afresh small collieries, which in times of low prices could not be worked to a profit. This is a gratifying feature of Forest operations, as it is pleasing to think of men of small capital, by push, judgment, industry, and perseverance, rising to comfort and prosperity; and we hope that those now alluded to may be safely placed in such a category.

#### REPORT FROM CORNWALL.

June 18.—We have not yet been favoured with another instalment of what is clearly our due—a higher figure for tin. It is perfectly out of the question to imagine for a moment that the 2s. advance which we have had at all represents the improved prospects of the market. For example, the strike in the tin-plate trade has now continued so long that the stocks of tin-plate are all but exhausted. That the stoppage of the manufacture will continue much longer we cannot believe, but, whether the time be long or short, this at least is certain—that whenever it is resumed there will be a very great extra demand for tin in that direction. And if, with the ordinary tin-plate demand cut off, the tin standard can rise, it is clear that a very substantial advance is to be expected whenever the manufacture is again opened. According to probabilities, therefore, prices should rule higher than they do; and that being so, it is clear that as a general rule adventurers should hold on, even if they do not buy.

The present condition of mining is one of expectation. There is less interest felt in what there is than in what there will be, and that future is very much in the hands of those who have the conduct of mining enterprises. Mining is just one of those matters in which we hear more of the old motto "One and All" than we always see of its influence; there is not that pulling together which is needed. Over and over again have we pointed out what injury has been done to mining by the unwise exactions of mineral lords, who have laid down conditions with which it is impossible on any commercial conditions to comply. But this is by no means all. It is to be regretted that, as a rule, there is so little disposition to consider improved processes, although it is plainly apparent that in the direction of improved operations Cornwall's chief reliance against foreign competition lies. The county is, therefore, all the more indebted to those who do put new processes to the test of actual experience. Such a debt is just now being incurred to Dr. Emmens, who has taken in hand a large mineral area near Callington. Dr. Emmens has three objects in view, as we understand:—First to introduce a method of mining by which all the rich courses and shoots in the lode must necessarily be discovered; secondly, to carry out a system of profitably treating ores of a percentage too low to be sent to market under the old plan; and, thirdly, to make Kit Hill, Hingston Down, and the surrounding district occupy its proper position as a gold-producing region. These are all most important points, and all Cornwall must be specially interested in the success of the first two of these objects. This is not the place to enter into full details of the new process [they will be found in another column of this week's Journal], but we certainly wish Dr. Emmens all success in the practice of his most ingenious invention.

The demand for china-clay is still on the increase, and there would appear practically to be no limit to its applications. There seems to be a great deal of mystery about the various uses to which it is put, but after all the clay merchants are more concerned about supplying the demand than the purpose in which the clay is employed after it leaves their works. There is no doubt that the output of the clay in the St. Austell district will be greatly stimulated by the Cornwall Minerals Railway. It is said, however, with what truth we are not aware, that the carriage charges on that system are heavier than was anticipated. Of course the shareholders in that concern are entitled to a fair return upon the large outlay they have so spiritedly made, but when that is secured the object should be to stimulate traffic by a suitable adaptation of rates. The directors of the line are too good men of business not to see this we should think.

Next week will witness the opening for traffic of a new railway link, which will exercise an important influence on the commercial prospects of Devon and Cornwall. We refer to the Bath and Evercreech line, which is a continuation of the Midland Railway from Bath, and bring direct narrow-gauge communication from the Midland and Northern districts of England so far as Exeter; and shortly, when the line between Okehampton and Lidford is completed, to Plymouth. It is hoped that it will not be long before steps are taken to carry out the works necessary to carry on the narrow gauge to a connection with the Cornwall Minerals Railway system.

The annual exhibition of the Royal Cornwall Polytechnic Society will be held at the end of August—in the last week in that month. There were some fears entertained lest the visit of the Prince of Wales to Plymouth, to open the new Guildhall erected in that town, would interfere somewhat with the prospects of the exhibition, but this point is, happily, set at rest by the announcement of the Prince that his visit to Plymouth will be on August 12.

#### REPORT FROM MONMOUTH AND SOUTH WALES.

June 18.—Up to this date masters and men are still at variance in regard to the contract question, and the mode of carrying out the 10 per cent. reduction. There is still, therefore, a stoppage of operations, though in some parts of the district both the ironworkers and colliers have continued at work. But the majority of the Union men, and especially colliers, have remained out since the 1st of the month. From day to day it has been hoped that work would be generally resumed, but so far it has been hoped in vain. What the issue will be is quite as uncertain as ever, but it is pretty clear that unless some terms are agreed upon there will be very serious times. The masters are contemplating a general lock-out, but whether they can really go to that extent it is difficult to say; it is to be hoped that the question will not have to be tried. A meeting is to be held to-morrow, which will, perhaps, decide the matter, and it is, therefore, looked forward to with considerable anxiety, but as there have been so many disappointments one can scarcely look to anything with any strong hope.

The ironworks continue in partial employ, and in the midst of this unsettled state of things a little trade is being carried on. During the past week some rails have been cleared to Constantinople, Esbjerg, Copenhagen, Gelle, New York, Dedagh, Santos, Campana, Gothenburg, Riga, and Valparaiso. On the whole, however, business is limited, but there is a probability that if the works were

to go on regularly again the trade would gradually improve. It is likely, however, that prices will remain low for some time to come.

The tin plate workers who are locked out evince a desire to resume work, many of them, no doubt, beginning to feel keenly the distress which their struggle has brought upon them. It is a struggle, too, that cannot bring them any good, because whenever they agree to go to work they will have to do so on the masters' terms. This is clear from the fact that the trade is so dull that the masters are but little disposed to re-open their establishments.

As a matter of course, the output of coal has very greatly diminished this month, but the market is not affected by it. The supplies appear to be quite equal to requirements, and, indeed, some colliery proprietors complain of their having to keep their coal about so long that the truck hire and other expenses amount to more than the coal is worth. This will indicate pretty clearly the general state of the trade.

The coal exports last month show a large falling off, as compared with the corresponding month of last year. Cardiff exported 213,943 tons, against 240,321 tons in May last year; Newport, 25,471 tons, against 28,633 tons; Swansea, 51,579 tons, against 61,319 tons; and Llanelli, 31,779 tons, against 13,979 tons. The present month, however, will bear a much less favourable comparison.

All things considered, the exports of iron were larger than might have been expected. Cardiff cleared 24,439 tons; Newport, 13,651 tons; Swansea, 5,594 tons. The following were the principal clearances:—Cardiff, 16,73 tons to Antwerp, 124 tons to Charlotte Town, 4,989 tons to Cronstadt, 3,892 tons to Ibrail, 1,391 tons to Rosario, 1,406 tons to Skutskav, 2,184 tons to Taganrog. Newport, 1,444 tons to Buenos Ayres, 868 tons to Campana, 1,540 tons to Callao, 1,850 to Gottenburg, 760 tons to Ibrail, 724 tons to Palma, 1,000 tons to Reval, 1,050 tons to Taganrog, 870 tons to Talehuano. Swansea, 9,933 tons to Boston, 1,630 tons to Cronstadt, 737 tons to Galais, 502 tons to Montreal, 500 tons to Matanzas, 240 tons to Prince Edward's 904 tons to St. John's.

It is announced that the certificates and shares in the Bilson and Cramp Meadow Collieries Company (Limited) are now ready for delivery. The company will declare a dividend next month.

A dividend at the rate of 15 per cent. per annum has been declared by the Swansea Valleys Steam Collieries Company (Limited). The company's works are reported to be making very satisfactory progress, the development of the colliery indicating that only capital is required to make it a permanently prosperous concern.

The 3-ft. Rhondda seam has been reached at the new pit being sunk for the Messrs. Glasbrook at Mountain Ash. The coal is of excellent quality, and lies 130 yards below the surface. Sinking operations have been going on for the last two years, and the object is to reach the steam coal, but this will, no doubt, be worked as well.

**EXAMINATION OF MINING MANAGERS IN THE SOUTH-WEST DISTRICT.**—The half-yearly meeting of the board was held at Newport last week; its sittings beginning on Tuesday and lasting till Thursday. A number of candidates from different parts of the country presented themselves for examination, and were very carefully tested as to their capabilities in various departments of mining management by the four gentlemen constituting the examining board—Mr. L. Brough, Clifton, H. M. Inspector of Mines; Mr. C. A. Harrison, Yolster, near Bath; Mr. W. Needham, Newport; and Mr. J. L. Thomas, Coleridge, Examiner and Secretary of the Board. The result of the examination has been favourable to Messrs. J. Needham (of Newport), George H. Daniel (of Pontypool), Maurice Devon (Derby), Ernest Deacon (Pontypool), and Griffith Thomas (Rhymney), who were passed as entitled to receive certificates of competency from the Home Secretary.

#### TRADE OF THE TYNE AND WEAR.

June 18.—The effect of the stoppage of the trade in Cleveland has been severely felt here in some branches of the Coal Trade. Small coals, and all manufacturing coals, are still falling in price; the demand for house coals, however, of best quality is tolerably good for the season. The export steam coal trade continues good, and prices are firmer. A large quantity of steam coals has lately been sent from the Tyne to the East Indies, the Mediterranean, and foreign ports generally. The Northumberland colliers are all working full time, and old stocks there are decreasing. The Coke Trade in South Durham has, of course, suffered severely from the Cleveland strike, and in addition to this the supply required in Cumberland and this district is also much less. But to set against this the export coke trade has certainly been good, so that really so far this trade, which is a very important one, has not suffered so much as might have been expected. At present good coke can be had at the ovens for 17s. to 19s. per ton. Numbers of ovens have been put out, and the make reduced to a great extent, and large stocks of coals are also laid up at some points. At many of the works in Durham short time has also been resorted to. Further heavy reductions in the price of coal and coke cannot be looked for unless corresponding reductions are made in the rate of wages, and it has been proposed to demand a further reduction of 10 per cent. on the wages of all the men employed at collieries in Durham. It is probable that this proposition will be made very soon; it cannot, indeed, be long delayed.

**THE CLEVELAND STRIKE.**—An important meeting was held at Saltburn on Tuesday, when this awkward case was pretty well discussed, and hopes are indulged in, which may, however, prove fallacious, that some movement may be made to bring to an end this ruinous strike. Mr. Casey, agent of the South Yorkshire Miners' Association, Mr. Burt, M.P., and Mr. Brown, of Staffordshire, were present, and in the speeches of these gentlemen every argument was used to persuade them, if possible, to seriously consider the position they are placed in, and also to induce them to give up the hard and fast line they have taken up of "No surrender." Mr. Brown, at the conclusion of a very sensible speech, advised the men to pass a resolution to reconsider the matter, and endeavour to effect a settlement of the strike. Mr. Burt told the men that his opinion was that there had been a little stupidity on both sides; he also stated to them the broad fact that all the men in all districts had been obliged to submit to a reduction varying from 10 to 40 per cent. He, therefore, strongly advised them to re-open negotiations with their employers and to make up their minds that a reduction in their rates is inevitable. Mr. Casey followed in the same strain as the former speaker, and at the close of the meeting a resolution was passed, "That in the opinion of this meeting it will be wise to call all the delegates together as early as possible in order to re-consider this question, and, if possible, to bring the strike to a speedy and satisfactory termination."

#### REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

June 18.—The Coal Trade of South Staffordshire continues in a paralysed condition, owing to the disastrous strike which has now been maintained for 12 weeks. It is becoming quite clear that the miners, so far from being able to resist the reduction now proposed, will have to submit to a still further reduction before the trade resumes its normal state. The serious condition to which affairs have been reduced is sufficiently indicated by the circumstance that, with the majority of pits in the district standing idle, there is no scarcity of fuel, nor are prices particularly firm, except for very best qualities of coal. The demand for ironstone of native samples is tolerably steady at about late rates. The collieries in the West Bromwich district—where the old rate of wages is being paid—are in active operation, and the thick coal raised is being disposed of without difficulty at full list quotations. An additional number of miners—chiefly non-Unionists—have this week resumed work at the re-luction.

The South Staffordshire Iron Trade remains depressed alike in the pig and finished branches. The Chilington Company have blown out two more furnaces, but Mr. Thomas, of Bloxwich, and Mr. Jones, of Birchills, have each re-lit one, so that the number in operation remains as last stated—44 out of 153 built. Common cinder pigs range from 3*l*. 10*s*. to 4*l*. according to quality, some being made of tap and others of flue cinder. Best all-mine hot-air pigs are quoted 6*l*. to 6*l*. 10*s*. but mine pigs of fair quality are changing hands at 5*l*. 12*s*. 6*d*. per ton. Cold-blast (Shropshire) pigs for foundry purposes are 7*l*. 10*s*. per ton, delivered in South Staffordshire. In the finished iron trade there is somewhat more doing in certain descriptions and qualities of produce than recently reported, but the general aspect of business remains far from satisfactory. Earl Dudley continues to quote 14*l*. 12*s*. 6*d*., and one or two other makers quote 14*l*. for bars; Messrs. Bradley and Co.'s price is 13*l*., and that of the other leading firms 12*l*. per ton, and proportionately for other classes of finished iron. Common (unmarked) bars are offering at 10*l*. 10*s*. per ton. Ordinary sheets are quoted 13*l*. to 14*l*.; nail rods, 11*l*. to 12*l*; and hoops, 1*l*. 10*s*. to 1*l*. 12*s*. per ton. Nail sheets of Belgian make have been offering in the district this week at 40*s*. per ton below the prices of local makers. The mills and forges throughout the district are in very partial operation.

The feature of the local share market this week has been the sale

of a Sandwell Park share (110*l.* paid) at 1050*l.*, or at a premium of 940*l.* Such a premium is quite without precedent in local share transactions, the nearest approach to it we can remember being 40 years ago, when the Staffordshire and Worcestershire Canal shares were 140*l.* paid, realised 1000*l.* each. Cannock and Huntington Colliery shares are 4*l.* premium; Ivy House and Northwood Colliery, 1*l.* dis.; Chillington Iron, 6*l.*; John Bagnall and Sons (Limited), 6*l.*; Patent Shaft and Axle, 5*l.* prem.

The North Staffordshire Iron Trade is without much change since our last report. The finished ironworks are doing 8 to 10 turns weekly. Ordinary bars are quoted 10*l.* per ton. Buyers are only giving out orders sufficient to satisfy immediate requirements. Some heavy stocks of pig-iron have been accumulated. Coal is in plentiful supply, and considerable quantities are being sent into other districts. A large number of new collieries are being opened out in various parts of the coal field.

In the neighbourhood of Oakengates (Shropshire) the condition of the coal and iron trades has considerably improved during the last three weeks.

The directors of the Pelsall Coal and Iron Company (Limited) have issued their first report and statement of accounts. The profit for the year is 11,635*l.*, and a dividend at the rate of 10 per cent. per annum is recommended, after writing off 1000*l.* towards the preliminary expenses. The stocks of materials were carefully valued at the reduced price ruling March, 1874, and a liberal allowance has been made towards exhaustion of minerals and for depreciation of plant. The sinking of the new pit at Pelsall has been completed, and another pit is being sunk to the deep coal towards the out-crop of the mine. At the Cutham and Short Heath Collieries three shafts have been sunk to the yard coal seam, and the necessary winding and other gear has been erected. Two pits previously sunk have been opened out in the brown ironstone. The miners employed by the company at Pelsall are now on strike, and it has been found necessary to blow out two of the blast-furnaces, so that for the moment the company shares the common fate of iron and coal concerns throughout the country, but the Pelsall Coal and Iron Company undoubtedly possesses the elements of prosperity, both in regard to the development of mineral wealth and to the manufacture of finished iron. The present paid up capital of the company is 152,335*l.*, in shares, and 38,533*l.* in debenture bonds, but a portion of this has only recently been called up.

#### REPORT FROM SCOTLAND.

**June 17.**—We regret to have to continue our unfavourable reports of the state of the Pig-Iron Market. The demand during the first six months of this year, especially for shipment, has been very small, and on account of the curtailment of production, which has now existed to a greater or less extent for three months, prices have not fallen to a point sufficiently low to bring about any revival of business. The most prominent and disagreeable feature in the market during the past week has been the development of a most un' healthy speculation. One class of operators, tempted by the high prices, had sold iron they did not possess; while another class, tempted by the small quantity of iron in the country, sought to monopolise the stock, and put themselves in a position to dictate prices. The consequence of this state of matters is that legitimate business becomes more restricted every day, and great exertions are made to hurry every ton of available iron into store. Warrants have fluctuated during the week betwixt 97*s.* and 105*s.*, and close this afternoon at 97*s.* 6*d.* for prompt settlement:—

SHIPMENTS.		
Week ending June 14, 1873		Tons 13,127
Week ending June 13, 1874		5,183
Decrease		7,944
Total decrease since Dec. 25, 1873		121,262
Imports of Middlesbrough pig iron into Grangemouth:—		
For the week ending June 13, 1874	Tons	1,730
For the week ending June 14, 1873		655
Increase		1,075
Total increase for 1874		23,956

Under the supposition that their prospects were brightening, the Lanarkshire miners are sticking to their tents as if they loved them, and as if they could persuade their employers that living on nothing in a tent was far more enjoyable and manly than engaging in the business and reaping the emoluments of a life of activity. Since last week several furnaces have been put out of blast, and no business—except what is highly speculative—is being engaged in by the brokers on 'Change, on account of the way in which the market is being rigged. As we noticed last week, if iron is not wanted the speculators can only reap a loss for their dexterity. The iron-masters do not mean to meet again until the miners have struck their tents, and brought their minds down to the working point.

On Monday a mass meeting of the miners of Stirling and Linlithgow was convened, when a vote of confidence in Mr. Macdonald, M.P., was passed, and they further declared their approval of his conduct in accepting a place on the Labour Commission. These resolutions, carried in Mr. Macdonald's presence, furnished a text for a lengthened address from the President, in which he reviewed the condition of affairs in the Stirling and Linlithgow districts, hinted pretty plainly that the works in Dunmore were in a state which required the immediate attention of the Government Inspector, spoke of his competence to give sound advice to the miners, because of the long schooling he had in questions affecting their interests, justified his connection with the Labour Commission, which he expected "would unearth and bring to light certain things that would astonish the very dullest in the community," and characterised an insane struggle into which a section of the Lanarkshire miners had plunged in defiance of his warning. "No one (he said) was to blame but themselves. They fought against the inevitable, and when anyone fought against the inevitable in trade, or any other matter, failure must be the only result."

The strike at the Grangemouth pits has been terminated by the company's withdrawing their notice of March 12, and substituting another of June 12 current, in which they state that "It is to be clearly understood that the company's pits are to be open to all men engaged by the company, and that the Union will not interfere in any way with the working of the colliery, and that the workmen will abide by the rules of this date, now posted up at the works."

For Malleable Iron it would appear as if the buyers had completely deserted this market, as only the smallest driblets are being offered, and prices are nearly nominal. The local orders for ship iron are being taken by makers in the South so low as 9*l.* 15*s.*, a ton over-head. A little has been done in half-inch and inch rods during the week, and a trifle in angle and bridge iron, but our rolling and plate mills are nearly at a standstill. The steel spindle works are somewhat busy, and something more is being done in machinery and pipes, but quietness pervades all branches of the iron trades here, although the shipyards are vocal with the sound of "hammers closing rivets up." The stagnation in the iron trade is reacting on the coal market, and although prices have not been officially reduced, coals can be brought (per agreement) much under what is considered the standard quotation. Stocks are increasing both here and on the East Coast; the Fife and Clackmannan masters complaining of the difficulty of disposing advantageously of Parrot Coal. Prices of all kinds are easier generally, and good orders could be cheaply and well placed just now. The shipments of the week compare favourably with those of the corresponding week last year, the figures being—for this year, 35,090 tons; same week last year, 36,772 tons.

The Messrs. Smith, of the Eglinton Engine Works, here, are adding to their large premises several new erections, which are to be used for boiler making and bridge-building purposes, and a large smithy. The principal structure is 204 feet long by about 52 feet wide, and 50 feet in height to the ridge; and the new smithy, which forms the extreme southern boundary of the works, is a one-storey building, also 204 feet in length, and 43 ft. wide. When these new buildings are completed and taken possession of for the operations of the firm, there will be erected on the West-street frontage, and on the site of the present smithy, a new building, four storeys high.

The Kapunda Copper Company fourth annual meeting was held here on Monday afternoon—Mr. Jonathan Thomson presiding—when a dividend at the rate of 1 per cent. per annum was declared, and directors and an auditor were appointed.

At the Oakbank Oil Company annual meeting, held yesterday, a dividend was declared of 10 per cent. upon the capital stock of the company, after writing off 10 per cent. for depreciation on pits and plant, and paying maintenance and repairs out of revenue.

Young's Paraffin Light and Mineral Oil Company annual meeting was held yesterday—Mr. John Orr Ewing, of Levensfield, chairman of the company, presiding. The report of the directors was approved, and a dividend at the rate of 7*l.* 5*s.* per cent. per annum declared. The Chairman stated that, owing to important reductions in wages and the staff, together with various improvements at the works and in the management generally, considerable savings would accrue during the current year. On the other hand, the stocks of petroleum in this country were so excessive, and the prices at which they are selling are so low, that reduced quotations for burning oils will have to be accepted, which may thus coun-

terbalance to a large extent the effect of the savings. But should a change for the better occur, owing to any diminution in the supply of petroleum, he had no doubt that the dividends of the company would be increased. The retiring directors—Messrs. Moffat, King, Kidston, and Kennedy—and the auditor, Mr. Moore, were thereafter re-elected; and a vote of thanks to the Chairman concluded the meeting.

On Monday night an explosion, attended with serious injury to three workmen, took place at Messrs. Robert Addie and Sons' Langdon Ironworks, Coalbridge. The accident was caused by one of the tuyeres giving way, and allowing a quantity of water to flow into the interior of the furnace. This falling on the molten mass within caused a sudden generation of steam, and the consequent fiery eruption from the furnace mouth.

#### REPORT FROM DERBYSHIRE AND YORKSHIRE.

**June 18.**—At the lead mines in Derbyshire the men are working in their ordinary manner, and business goes on in its usual channel. The quantity of ore raised appears to be of an average, for one never hears of any startling finds, such as are reported from other districts, and which may probably arise from the fact that extensive mines do not often change hands in Derbyshire, so that there is not much to be gained by making places look unusually rosy. The few companies that own mines in the Peak and other districts are also not on such a very large scale as to cause any great excitement with regard to the prices at which the shares can be purchased. Our collieries and ironworks are differently circumstanced, for in them a great deal of capital is invested, and several of them are on a very large scale, regularly paying unusually high dividends. Foremost amongst them is the Staveley Company, whose pits and works find employment for something like 5000 workpeople. That the concern is in the highest degree profitable, and considered unusually safe, may be gathered from the fact that the ordinary 100*l.* shares, on which 6*l.* is paid up, are now quoted at from 53 to 55 premium. The Sheepbridge Company is also in a healthy state, if judged by its position in the share market. At Staveley a very fair business has of late been done in pipes and other castings, for which the foundries are noted, whilst a large tonnage of coal has been raised at the pits. Of late an increased business has been done with the metropolis from Staveley, there having been forwarded last month nearly 8900 tons. A large quantity has also been forwarded to Birmingham and the West. It is understood that the miners have just received notice of a reduction of wages, consequent on the altered state of the coal trade. The major part of the men are understood not to belong to any Union, and, having many advantages that are not enjoyed by miners generally, it is not expected that there will be any interruption to work. The Sheepbridge Company, largely engaged in the producing of pig and other iron and coal, have also given their colliers notice of a reduction of wages. Indeed, the notices have been pretty general, but it is expected that in some few instances there will be a brief turn-out. At Pinxton the men have been locked out, having refused the proposed reduction of 8*l.* per cent.

The Sheffield trades are much in the same state as when last reported on, and there is not likely at present to be any marked change. The business doing with America has been comparatively trifling as compared with the previous year or two, whilst Russia is still one of our best customers. The Bessemer establishments in the town, as well as those outside, are busy, and some of them have orders in hand for rails that, it is said, will last them for several months to come. There is no improvement as regards cast-steel, the demand being so moderate that many of the leading firms continue their men on short time. Files, saws, and edge tools are in tolerably fair request, but the table and spring knife branches are very dull indeed. Coal is rather easier to buy, but its reduction appears to have in no way affected the trade of the town.

Throughout South Yorkshire the wages question is causing a great deal of excitement, and it is almost premature to say what will be the result of the action taken by the colliery owners; but the prevailing opinion is that a considerable number of the miners will strike. Already about 300 have struck at the Dodworth Silkstone Colliery, near Barnsley, against the decision given by a gentleman whom they agreed upon as referee with regard to an old standing matter with reference to wages, but not bearing in any way on the proposed general reduction. No pay is given from the Association, because the men refused to accept the decision given against them. On Tuesday they held an open-air meeting, when it was agreed to appoint a committee to draw up a circular to be sent to all the lodges, with the view of overruling the decision come to by the executive. At the New Gawber Colliery matters have taken a rather singular turn, and the men received notice to the effect that the proprietors accepted the 10 per cent. reduction "agreed to by the Miners' Association on May 22, and confirmed on June 2." The notice, however, further states that "in 28 days from the date hereof we shall make a further reduction of 10 per cent. in your wages." It is needless to say the decision come to by the Association cannot be enforced against the men without their agreeing to it. The leaders of the Association are in very bad odour, and there is a strong feeling of antagonism on the part of the great body of the men against them. One company—the Willow Bank—have posted notices in the pit-hole that, owing to the general good conduct of their workmen, and their attention to their respective duties, it is not intended to reduce wages from May 28 until July 8; however, there will be no telling with accuracy what will be the result of the notices of reduction, but the probability is that several places will be standing.

**IMPORTANT CONVICTION UNDER THE MINES INSPECTION ACT.**—On Thursday last one of the first summonses issued, we believe, since the Act of 1872 came into operation, against a certificated manager for having only one shaft in connection with a colliery, was heard at Sherborne. The information was laid by Mr. F. N. Wardle, Her Majesty's Inspector of Mines for Yorkshire, and charged Mr. J. R. Robinson, certificated manager of Newton Main, near Castleford, with having violated the 20th section of the Act, which provides that in every mine to which the Act applies there shall be at least "two shafts or outlets, separated by natural strata of not less than 10 ft. in breadth, by which shafts or outlets distinct means of ingress and egress are available to the persons employed in such seam," &c. It was clearly proved, and indeed admitted, that the Act had been contravened. Mr. Robinson, therefore, pleaded guilty, and was fined 5*l.* and costs. It will, of course, be necessary to have another shaft, so that the Act shall be complied with, for the fine does not in any way remove the liability of the manager.

**THE YORKSHIRE COAL FIELD, AND RAILWAY ACCOMMODATION.**—That there is no more important coal field than that of Yorkshire is abundantly shown by the fact that during the last three or four years it has formed the battle-field of the great railway fights in the Committee Rooms of the House of Commons, as it did also in 1864, when the Great Eastern, by a line from Doncaster to Peterborough, proposed to carry coal from Yorkshire to London at a farthing per ton per mile. After that, in 1871, a Bill was introduced for a mineral line connecting the Manchester and Sheffield with the Great Eastern by a junction near to Peterborough, but being opposed by the Midland and Great Northern, although they were at war at the time, the efforts of the two great lines were successful, and the Committee threw out the project. In 1872 the Great Northern succeeded in getting a line from Nottingham to Derby, opening up the rich mineral district west of the Erewash Valley, and thus entering into the heart of the Midland coal field. Thus affected in a vital part, last year the Midland Company formed an alliance with the Manchester and Sheffield, and promoted a line from Doncaster to Rushton, near Market Harborough, the entire length being 112 miles. The opposition of the Great Northern was again successful, although the South Yorkshire colliery owners almost to a man gave evidence in its favour. This session two lines of considerable importance with respect to the development of the minerals in the largest unworked coal fields in Yorkshire—and which only awaits railway facilities to be opened out—would send thousands of tons of coal weekly to our southern and other markets. The principal of those lines was that promoted by the Midland and the North Eastern, the Sheffield and Knottingley and Ferrybridge Railway to connect Swinton, near Sheffield, with the North Eastern system. The distance was only 15 miles, but it would have effected a saving of seven miles in the journey between Sheffield and York, besides passing through a vast and valuable coal field, extending for miles along the route. It would have touched upon a great many places that have long been waiting for a railway to open out seams of the most valuable coal in Yorkshire, both as regards quality and thickness. The line would have passed through the at present locked-up coal fields of Bolton-on-Dearne, Goldthorpe, Thurnscoe, Clayton, Ffrickley, going within a short distance of Hickleton, and near to Hemsworth, between two which places there is the finest unexplored coal field in Yorkshire, being six square miles in extent, nearly level, the Barnsley Nine feet seam being at a distance from the surface of about 560 yards. The line would also have passed by South Kirkby, where Mr. Leeman, M.P., and some other gentlemen recently secured a lease of about 1500 acres of coal from the Rev. J. Allatt, and go onwards to Badsworth, Ackworth, Pontefract, &c. In almost every one of those places there are beds of the best coal to be found in Yorkshire, so that it is not saying too much that were a line to pass through there the productive power of the West Riding in three or four years would

be increased not less than 2,000,000 tons a year. The rival line promoted by the Great Northern and the Manchester companies would have gone in a similar direction, and in some places would run almost parallel. An effort it appears was made to effect a compromise, but as the Midland and the North Eastern refused to let the rival companies become joint partners in their scheme negotiations were stopped, and the preamble of both Bills declared not to have been proved. The opening out of an immense coal field delayed indefinitely, or until some agreement can be come to by rival companies. It may be said that the price of coal is greatly to the advantage not only of the public but of railway companies by increased traffic facilities being given for the development of our mineral resources. A marked reduction in the price of coal even at the present time could not fail to give a great impetus to many of our most important industries, especially those connected with the production of iron and steel. It is, therefore, to be regretted that the most important coal field in Yorkshire will have to be locked up for some time longer, but the time is fast approaching when the public interest will have to be taken into account before that of any railway or other influential company.

#### THE COMPANIES ACTS, 1862 AND 1867.

#### IN THE MATTER OF THE GEM TIN MINING COMPANY (LIMITED).

**T**HIS LIQUIDATOR OF the ABOVE-NAMED COMPANY invites TENDERS for the PURCHASE of the WHOLE of the PROPERTY belonging to the said company, comprising the COMPANY'S INTEREST in the LEASE of the MINE known as the GEM TIN MINE, in the parish of Whitchurch, near Tavistock, in the county of Devon.

The mine has been extensively opened, and is complete with all necessary machinery.

The plant consists of WATER WHEELS, pitwork, and fittings in the shafts and levels, stamping and dressing machinery, wagons and tramroad, and all necessary tools, &c., for carrying on an extensive mine.

Tenders to be made separately for the lease and plant, addressed to the Liquidator, as below, to be sent in on or before the 29th instant.

Permission to inspect the mine, full inventory of plant, and all further particulars, with conditions of sale, may be obtained of the Liquidator—

FREDERICK WARWICK, at his offices, 25, Bucklersbury, London, E.C.

**T**ENDERS are INVITED for the PURCHASE of a VALUABLE TIN MINE, together with the LEASE of the SETT, the WHOLE of the valuable ENGINE, PLANT, patent DRESSING MACHINERY, BUILDINGS, and PITWORK, fitted in two shafts to the 150 fm. level, and complete underground rails and plant. The property is situated in a well-known district of Cornwall.

The mine has been opened to a great extent, and has returned large quantities of tin. Even on the workings since January last the sales of ore have more than paid working cost.

Full particulars and orders to view will be given to principals or their solicitors on application to Mr. FREDERICK WARWICK, 25, Bucklersbury, London, E.C.

#### IRON ORE MINE.

**T**O BE SOLD, BY PRIVATE TENDER, the CADEY CROOK IRON ORE MINE. This Mine is in the neighbourhood of DALTON, and very near the Lindlow Coal Property. It is 29 fms. deep, with a good lot of iron ore, worth 27 per fathom at the present time. There is a PORTABLE ENGINE and HORSE WHIM, with a good LIFT OF PUMPS, all in good working order.

For further particulars, apply to "J. B. L." MINING JOURNAL Office, 26, Fleet street, London, E.C.

#### IRON ORE ROYALTY.

**A** VERY VALUABLE IRON ORE ROYALTY TO BE SOLD, BY PRIVATE TREATY, in the DALTON district, adjoining mines probably rich for metallic ore. Several lodges pass through this valuable property, which have realised great profits.

Address for particulars, to "J. P. E. B." MINING JOURNAL Office, 26, Fleet street, London, E.C.

#### THE WILSDEN COLLIERIES.

#### NEAR BRADFORD.

**T**O BE LET, upon a Lease for 14 years (or 21 if agreed upon), with possession from July 1st.

#### THE VALUABLE SEAMS OF COAL.

Lying beneath the Commons within the Manor of Allerton and Wilsden (which were enclosed in 1840), and also beneath all other Lands within the same Manor, well known as NEW LANDS, consisting of TWO BEDS or SEAMS, known as the HARD BED and the SOFT BED.

This valuable colliery has been worked without any interruption for more than 50 years, the last 14 by Messrs. ISAAC WOOD and SON (proprietors of an adjacent colliery at Dentholme), whose lease expires on 1st July.

This coal is largely consumed in Allerton and Wilsden, and the neighbouring towns of Bradford, Bingley, Keighley, &c., and is capable of being greatly extended.

It is needless to say that the pits, shafts, and drifts are in full working order, and the plant will be taken at the usual valuation.

The average thickness of each seam is 18 in., but if found in any part less an abatement in rent will be made.

The highest tender above 23*l.* per acre for the hard bed and 2*l.* 7*s.* for the soft, with a minimum rent of £45

CORNWALL.  
PARISHES OF BLISLAND, HELLAND, AND ST. MABYN,  
NEAR BODMIN.

MR. C. E. PEARCE (Auctioneer) WILL SELL, BY AUCTION,  
at the Royal Hotel, (Sandoe's), Bodmin, on Thursday, the 20th day of July  
next, at Three o'clock P.M., the FEE SIMPLE of the FOLLOWING FARMS:—  
Lot 1.—TRESWIGGER, in the parish of Blisland, 60 A. 2 R. 28 P., occupied by  
Mr. Thomas Rate for a term ending at Michaelmas next.

Mr. Thomas Rate for a term ending at Michaelmas next. There are indications of china-clay  
on this estate.

Lot 2.—NORTH KERROW, in Blisland, 9 A. 0 R. 33 P., held by Mr. William  
Harris for a life, now aged 81, at a conventional rent of £6.

Lot 3.—SOUTH KERROW, in Blisland, 16 A. 2 R. 27 P., occupied by Mr. Thomas  
Matthew Copin for a term of 14 years from Michaelmas, 1867, with commonable  
rights over SOUTH PENQUITE MARSH. There are stream tin and indications  
of china-clay in this lot.

Lot 4.—COCK'S TENEMENT, in the parish of Helland, 48 A. 3 R. 13 P., held by  
Mr. Nickel for a life, aged 78, at a conventional rent of £1 11s. 6d. The tithes on  
this lot are covered by a modus of 10s. per annum.

Lot 5.—SLIPPER ROCKS' TENEMENT, in Helland, 36 A. 2 R. 33 P., held by  
Mrs. Nickel for a life, aged 78, at a conventional rent of £1 7s. 6d. The tithes on  
this lot are covered by a modus of 10s. per annum.

Lot 6.—LOWER KERNICK and PENNINGTON'S KERNICK, otherwise  
STOKE TOWN, in Helland, 47 A. 1 R. 8 P., occupied by Mr. Joseph Stick, for a  
term of 14 years from Michaelmas, 1867.

Lot 7.—BODWYN, in Helland, 57 A. 2 R. 18 P., including four-sixths of BOD-  
WYN DOWNS, occupied by Mr. Stephen Bate, for a term of 14 years from  
Michaelmas, 1867.

Lot 8.—BECOVEN, in the parish of St. Mabyn, 96 A. 0 R. 18 P., occupied by Mr.  
Henry Mills, for a term which ends at Michaelmas next.

All timber will be sold as part of the lots on which it stands.  
Details of the estates and maps, with conditions of sale, and all other particulars  
and information, can be obtained on application to the Auctioneer, at Bodmin;  
FRANCIS HEXT, Esq., at Tredethy, near Bodmin; MR. NICHOLAS WHITLEY, Truro;  
or Messrs. Rooth and CORNISH, Solicitors, Penzance.

Dated Registrar's Office, Truro, the 18th day of June, 1874.

## FLINTSHIRE.

THE REMAINING PORTION OF THE CILCEN HALL ESTATE, comprising  
VALUABLE and IMPORTANT FREEHOLD MINERAL PROPERTIES,  
QUARRIES, and FARM LANDS.

MESSRS. HARDS, VAUGHAN, AND JENKINSON WILL  
SELL, BY AUCTION, at the Mart, London, on Wednesday, July 8th, at  
Two o'clock, a valuable and important

## FREEHOLD ESTATE.

Comprising a fertile FARM, known as HENDRE FIGLIET, situate in the parish  
of Hafod, in the county of Flint, comprising about 200 acres, a portion of which  
is let at £175 per annum; also all those large and important MINERAL PRO-  
PERTIES, known as the GREAT HENDRE LEAD MINE, the NORTH  
HENDRE LEAD MINE, and the HENDRE LIME WORKS.

The Great Hendre Lead Mine is now in hand, but it is assumed that the con-  
struction of the Deep Level, which it is proposed to make, will again enable this  
mine to be worked to great advantage. The well-known North Hendre Lead Mine  
is in full work, and the royalties paid last year exceeded £500. The Hendre Lime  
Works are in full operation, and large and extensive works have recently been  
added to them. They are held on lease for a term of about 50 years, at a dead  
rent of £50 per annum, merging into certain royalties.

Also about FOUR ACRES OF LAND, with TENEMENT, known as Llywlyn  
Bach, situate in the parish of Ysceifog. This valuable property is most advan-  
tageously situate midway between two railway stations on the Mold and Denbigh  
Line, in connection with the North-Western and Chester and Holyhead Lines, and  
within two or three hours of Liverpool and Manchester.

It may be viewed, and particulars had, of Messrs. FIELD, SON, and PULLEY,  
Solicitors, Norwich; of Messrs. ASHURST, MORRIS, and CO., Solicitors, 6, Old  
Jewry, London, E.C.; of Messrs. LACEY, BANNER, BIRD, and CO., Solicitors,  
Liverpool; of Messrs. DEW and SON, Land Agents, Bangor; at the Grosvenor  
Hotel, Chester; the Black Lion, Mold; the Bull, Denbigh; the Belvoir, Rhyd; at  
the Auction Mart; and of the Auctioneers, 63, Moorgate-street, E.C., and Green-  
wich.

VALUABLE COLLIERY AND IRON MINES,  
FOREST OF DEAN, GLOUCESTERSHIRE.

MESSRS. BRUTON, KNOWLES, AND BRUTON WILL SELL,  
BY AUCTION (unless previously disposed of by private treaty), at the  
Bell Hotel, Gloucester, on Saturday, the 25th day of July, 1874, at Three for Four  
o'clock in the afternoon, either together or in the following lots, and subject to  
printed conditions of sale:—

## LOT 1.

ALL THAT VALUABLE FREEHOLD COLLIERY, known as "THE COUSINS  
ENGINE COLLIERY," situate at Whitecroft, near Lydney, in the Forest of Dean,  
in the county of Gloucester, and comprising, with others, the following principal  
VEINS or SEAMS of COAL—viz., "The Coleford High Delf," "Whittington,"  
and "Yorkley" Veins, and the surface boundaries of which said colliery comprise  
an area of 1/2 acre, or thereabouts.

The area is a gale held in perpetuity under a grant from the Crown, at a low  
royalty and dead rent.

Being crossed by the Severn and Wye Railway, now in course of construction, it  
is most favourably situated for the transit, at a low rate, of the produce to the  
shipping port of Lydney, distant about three miles, and the pits may be sunk suit-  
ably for hauling the coal direct into the railway trucks. The colliery is also well  
situated for road demand of its produce, being in the immediate vicinity of iron  
and other works, in which the produce of similar collieries is extensively consumed.  
The above-mentioned principal veins are worked in collieries (yielding most pro-  
ductively) in the immediate neighbourhood.

The coal from the Coleford High Delf Vein is highly valued as a steam coal, and  
for use in the manufacture of iron; and that from the Whittington and Yorkley  
Veins is excellent for domestic and gas purposes, and will stand shipping with  
very little breakage.

## LOT 2.

ALL THAT VALUABLE FREEHOLD IRON MINE, known as "THE LYD-  
BROOK DEEP LEVEL IRON MINE," situate (near Ross) at Lydbrook, in the  
said Forest of Dean, and comprising, with others, the veins of ironstone known as  
"The Sandstone" Vein, and "The Limestone" Vein, and the surface boundaries  
of which said colliery comprise an area of 200 acres, or thereabouts.

And also ALL THAT VALUABLE FREEHOLD IRON MINE, known as "THE  
LIMEKILN POOL LEVEL IRON MINE," situate at Lydbrook aforesaid, ad-  
joining to the first-mentioned iron mine, and comprising similar veins to those in  
such first-mentioned iron mine, and the surface boundaries of which said Lime-  
kiln Pool Level Iron Mine comprise an area of about 90 acres.

The above iron mines are gales held in perpetuity under grants from the Crown,  
subject respectively to low royalties and certain dead rents.

The whole of the one in the Limekiln Pool Level Mine can be won by means of  
the free drainage level driven near to the vein of ore, and forming the deep  
dry line of the mine, while by instroke from such mine about 70 acres of the Lyd-  
brook Iron Mine may be opened and worked. The two mines are also conve-  
niently situated for working in connection with each other, for the purposes of  
ventilation, and the quick dispatch of the produce to the surface. The produce is  
superior to the average of that raised in the district, and is easy to smelt. The  
said Severn and Wye Railway passes within a few yards of the two iron mines,  
and will place them in direct communication with, as well as the local, the South  
Wales and South Staffordshire furnaces.

The above colliery and iron mines present rare opportunities to persons wishing  
to embark capital with a view to opulent returns.

Lithographed plans and printed particulars, and conditions of sale, and all other  
information may be obtained, in the country, at the offices of Messrs. WIGHT  
and SON, Solicitors, Dudley; or in London of either of the following solicitors:—  
MESSRS. FREER, FORSTER, and CO., 28, Lincoln's Inn-fields; and Messrs.  
GEDGE, KIRBY, and MILLETT, 1, Old Palace-yard, Westminster.

## SOMERSETSHIRE—BLAGDON AND UBLEY.

PRELIMINARY NOTICE.

IMPORTANT TO MINE OWNERS, LEAD SMELTERS, AND OTHERS.

VALUABLE FARM, MINING PROPERTY, & LEAD WORKS.

MR. JAMES COLLINGS begs to announce that he has been  
favoured with instructions to SELL, BY AUCTION, at the Mitre Hotel,  
LAND, called WILLOUGHBY'S FARM, situate in the parish of UBLEY. This  
farm contains 65 A. 1 R. 0 P., of arable, grass, and woodland; together with the  
MENDIP LEAD WORKS AND FURNACES, STEAM ENGINES, fixed PLANT  
and MACHINERY, all in first-rate working order; manager's house, office,  
stables, coach-houses, and other premises. Also, the INTEREST of the VENDORS  
in the LAND and MINERALS in the immediate vicinity, occupied and worked by  
them as tenants from year to year under the Viscount Clifden and Col. Mackenzie.

All the VALUABLE and COMPACT FARM, situate at Charterhouse, in the  
parish of BLAGDON, and called TEMPLE EYDON FARM, with the farmhouse,  
outhouses, and several closes of first-rate pasture and useful arable land, lying  
together and mostly in a ring fence, and containing about 205 acres, with several  
cottages and other buildings. This is one of the most desirable farms in the district.

Full particulars, with plans, will be shortly published.

The premises may be viewed by permission of the respective tenants, and, in  
the meantime, any further information may be obtained on application to Messrs.  
BECKER and GREEN, Solicitors, Northampton; C. H. DAVIDS, Esq., Land Agent,  
Bathurst; or the Auctioneer, Axbridge, near Weston-super-Mare.

Dated May 29th, 1874.

VALUABLE COAL, IRON, AND CHARCOAL PROPERTY for  
SALE, situate in the UNITED STATES.—Particulars: (say) 31,000 acres  
STORES, and THREE CHARCOAL LANDS, with the BUILDINGS, SHOPS, FOUR  
FURNACES, and THREE CHARCOAL FURNACES, all in good order. The  
furnaces are now in blast (one new and one lately repaired), having daily capacity of  
excavated mines, wagons, and general supplies: 5000 acres of BLOCK COAL and  
BITUMINOUS COAL LANDS, and 14,000 acres of TIMBER LAND for CHAR-  
COAL; about 50,000 acres in all. Near river and railway. The seams of coal are  
about 3 ft.; bituminous, 3 ft.; cannel, 14 in. Iron ore inexhaustible; and a  
block coal, 3 ft.; bituminous, 3 ft.; cannel, 14 in. Iron ore inexhaustible;  
and the junior partner is in consumption. Has given very large returns.

Full particulars may be obtained from HALL and CO., Dealers in Municipal Bonds  
and American Securities, Gresham House, London. Lists and pamphlets on appli-  
cation.

This being a really genuine property is worth the attention of capitalists.

## THE MINING JOURNAL.

In the Court of the Vice-Warden of the Stannaries.  
Stannaries of Cornwall.

**I**N the MATTER of the COMPANIES ACTS, 1862 and 1867, and  
of the ST. BLAZHEY CONSOLS TIN MINE (LIMITED).—ALL CREDITORS  
or CLAIMANTS of the ABOVE-NAMED COMPANY, who have not  
received notice from the Official Liquidator of the said Company that their claims  
have been already admitted, are hereby required to COME IN AND PROVE  
THEIR SEVERAL DEBTS or CLAIMS at the Registrar's Office, Truro, on  
Thursday, the 2nd day of July next, at Eleven o'clock in the forenoon, or in  
default thereof, they WILL BE EXCLUDED FROM THE BENEFIT OF ANY  
DISTRIBUTION made before such proof. And for the purpose of such proof  
they are either to attend in person, or by their solicitors or competent agents, or  
(unless such attendance be required by the Registrar's summons or by the Official  
Liquidator's notice) they are to send affidavits of their several debts or claims to  
the Registrar of the Court at Truro, such affidavits being sworn either before  
some Commissioner of the said Court, or before any Commissioner or one of the  
Superior Courts lawfully authorised to take and receive affidavits and affirmations.

FREDERICK MARSHALL, Registrar.

Dated Registrar's Office, Truro, the 18th day of June, 1874.

WEDNESDAY, JULY 1ST, 1874.

VERY VALUABLE MINE MACHINERY AND MATERIALS FOR SALE,  
AT NORTH ROSKEAR MINE, CAMBORNE, CORNWALL.

**M**R. T. T. WHEAR, Auctioneer, Camborne, has been favoured  
with instructions to SELL, BY PUBLIC AUCTION, on Wednesday, the  
1st July, 1874, at Eleven o'clock in the forenoon, at North Roskear Mine, Cam-  
borne, the FOLLOWING VALUABLE

MACHINERY AND MATERIALS thereon, comprising:—

ONE 70 in. cylinder ENGINE, 10 ft. stroke in cylinder, and 8 ft. in shaft, with  
metallic piston, and THREE 13 ton BOILERS.

ONE cast iron BALANCE BOB, at surface.

ONE 22 in. WINDING ENGINE, metallic piston, 6 ft. stroke, ONE 10 ton  
BOILER, iron cage, &c.

ONE 25 in. WINDING ENGINE, 6 ft. stroke, 19 ft. fly-wheel, with wrought  
iron axle, ONE 10 ton BOILER, and whm cage for wire rope.

ONE 16 in. ENGINE, 4 ft. stroke, with 2 fly-wheels, and ONE 8 ton BOILER,  
iron cage, and gear for whm, and crusher attached.

1 shears, 60 ft. high.

1 ditto, 36 ft. high.

1 capstan, iron centre.

1 ditto, oak centre.

16 in. pumps.

6 12 in. ditto.

10 in. ditto.

27 8 in. ditto.

25 6 in. ditto.

16 in. pole case.

15 in. ditto.

14 in. ditto.

13 in. ditto.

12 in. ditto.

11 in. ditto.

10 in. ditto.

9 in. ditto.

8 in. ditto.

7 in. ditto.

6 in. ditto.

5 in. ditto.

4 in. ditto.

3 in. ditto.

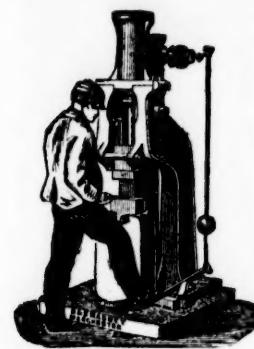
2 in. ditto.

1 in. ditto.

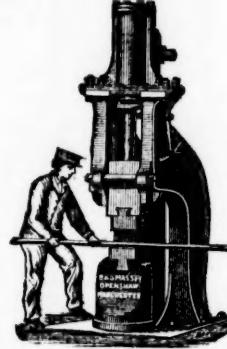
# B. & S. MASSEY, OPENSHAW, MANCHESTER.

PRIZE MEDALS AWARDED:—Paris, 1837; Havre, 1838; Highland Society, 1870; Liverpool, 1871; Moscow, 1872; Vienna, 1873.

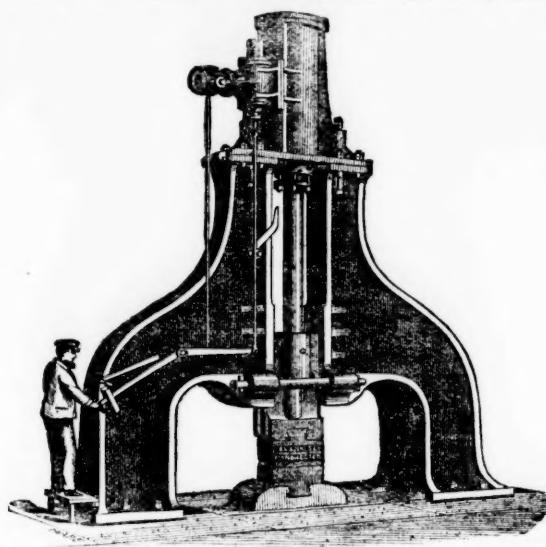
Patentees and Makers of Double and Single-acting STEAM HAMMERS of all sizes, from  $\frac{1}{2}$  cwt. to 20 tons, with self-acting or hand motion, in either case giving a perfectly DEAD BLOW, while the former may be worked by hand when desired. Large Hammers, with Improved Framing, in Cast or Wrought Iron. Small Hammers, working up to 500 blows per minute, in some cases being worked by the Foot of the Smith, and not requiring any separate Driver.



STEAM HAMMER WITH HAND MOTION.

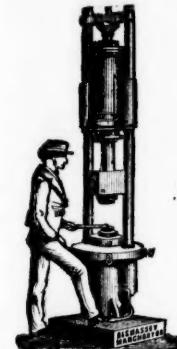


STEAM HAMMER WITH SELF-ACTING MOTION.

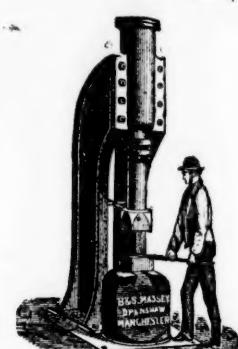


Steam Hammer for Heavy Forging.

SPECIAL STEAM STAMPS, of great importance for Forging, Stamping, Punching, Bolt-making, Bending, &c. STEAM HAMMERS for Engineers, Machinists, Ship-builders, Steel Tilers, Millwrights, Coppersmiths, Railway Carriage and Wagon Builders, Colliery Proprietors, Ship Smiths, Bolt Makers, Cutlers, File Makers, Spindle and Flyer Makers, Spade Makers, Locomotive and other Wheel Makers, &c.; also for Use in Repairing Smithies of Mills and Works of all kinds; for straightening Bars, bending Cranks, breaking Pig-iron, &c.



Special Steam Stamp.



General Smithy Hammer.

From 60 to 100 Steam Hammers and Steam Stamps may usually be seen in construction at the Works.

## BARROWS

AND

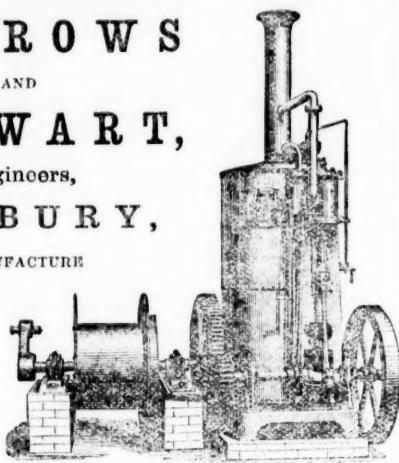
## STEWART,

Engineers,

## BANBURY,

MANUFACTURE

Semi-  
Portable  
AND  
Vertical



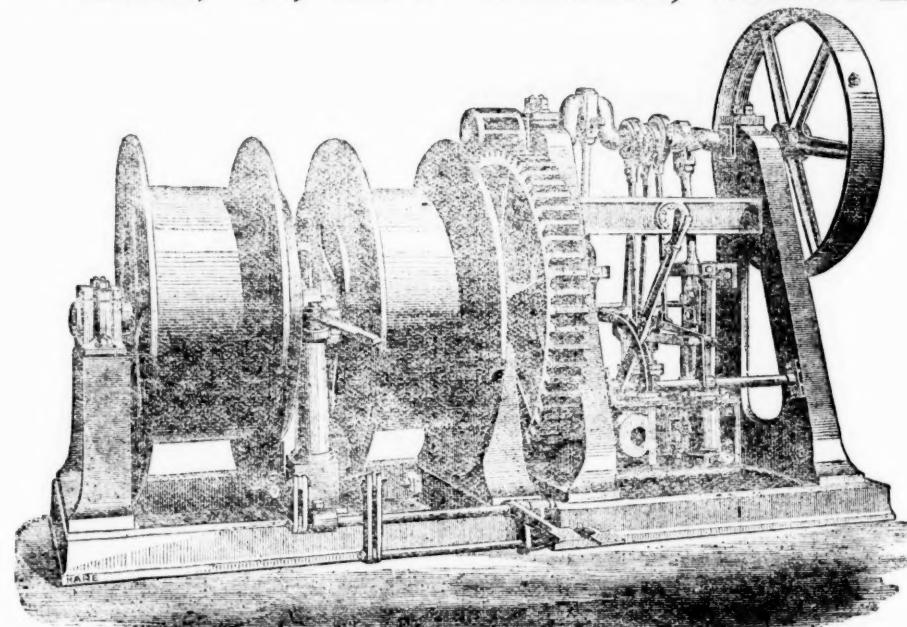
## STEAM ENGINES, FOR PIT SINKING,

WINDING COAL, PUMPING, &c.

Also COMBINED MILLS and ENGINES for Grinding Slag, Sand, Mortar, &c.

Specifications and prices on application.

## I. G. BASS, 18, BOW STREET, SHEFFIELD.



IMPROVED DESIGN of Engine for HAULING, for use with either Steam or Compressed Air.

Takes less room, and can be supplied for less money, than any other Engine of same power.

May also be had with single drum for winding.

## FRANCIS MORTON & CO., LIMITED, LIVERPOOL,

Manufacture, in Galvanised and Corrugated Iron,

## IRON ROOFS, IRON BUILDINGS, IRON SHEDS,

Which they have extensively supplied and erected for mining requirements at home and abroad.

ESTIMATES FURNISHED ON RECEIPT OF PARTICULARS.

## F. M. & CO.'S PATENT IRON ROOFING TILES OR SLATES ARE IN SPECIAL FAVOUR FOR TEMPORARY COVERING,

They require considerably less framework to carry them than ordinary slates or tiles.

ILLUSTRATED CATALOGUE ON APPLICATION.

London Office, 36, PARLIAMENT STREET, S.W.

## THOMAS WARDEN & SON, IRON, STEEL, AND GENERAL MERCHANTS, LIONEL STREET, BIRMINGHAM,

Manufacturers of Anvils, Vices, Hammers, Bellows, Tue Irons, Hydraulic and Screw Jacks, Crabs, Cranes, Spades, Shovels, Picks, Arms and Boxes, Axles, Springs, Hurdles and Fencing, Screw Bolts, Washers, Hames, Chains, Files, Nails, &c., &c.

SECOND-HAND RAILS, AND EVERY DESCRIPTION OF RAILWAY, COLLIERY, AND CONTRACTORS PLANT  
ALWAYS ON HAND.

## THOMAS TURTON AND SONS,

MANUFACTURERS OF

CAST STEEL FOR PUNCHES, TAPS, and DIES,

TURNING TOOLS, CHISELS, &c.

CAST STEEL PISTON RODS, CRANK PINS, CON-

NECTING RODS, STRAIGHT AND CRANK

AXLES, SHAFTS &c.

FORGINGS of EVERY DESCRIPTION.

DOUBLESHEARSTEEL FILES MARKED

BLISTER STEEL, T. TURTON

SPRING STEEL, EDIF. TURTON MARKED

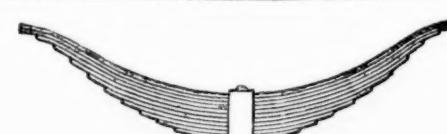
GERMAN STEEL, WM. GRIEVES & SON

Locomotive Engine, Railway Carriage and Wagon

Springs and Buffers.

SHEAF WORKS AND SPRING WORKS, SHEFFIELD,  
LONDON WAREHOUSE, 35, QUEEN STREET, CANNON STREET, CITY, E.C.

Where the largest stock of steel, files, tools, &c., may be selected from.



## THE RAILWAY SPRING COMPANY,

MILLSANDS, SHEFFIELD,

MANUFACTURERS OF EVERY DESCRIPTION OF

RAILWAY SPRINGS.

## MONEY, TIME, AND LIFE

ARE LOST IN THE EVENT OF

ACCIDENTAL INJURY OR DEATH.

Provide against these losses by a Policy of the RAILWAY PASSENGER ASSURANCE COMPANY AGAINST ACCIDENTS OF ALL KINDS.

THE OLDEST AND LARGEST ACCIDENTAL INSURANCE COMPANY.  
H. & A. KENNARD & CO., LTD.

PAID-UP CAPITAL AND RESERVE FUND £140,000.

ANNUAL INCOME, £160,000.

£810,000 have been paid as compensation.

Bonus allowed to Insureds of Five Years' standing.

Apply to the Clerks at the Railway Stations, to the Local Agents, or—  
64, CORNHILL, and 10, REGENT STREET, LONDON.

WILLIAM J. VIAN, Secretary.

## THE DARLINGTON ROCK BORER.

PATENTED IN GREAT BRITAIN, PRUSSIA, FRANCE,  
AND VARIOUS CONTINENTAL COUNTRIES.

Makes 300 to 1000 Blows per Minute, as may be required, without  
Valve or Complicated Gear.

DRIVEN WITH STEAM OR COMPRESSED AIR.

SPECIALLY SUITABLE FOR RAILWAY, QUARRY, AND MINE WORK.

For price and particulars, apply to—

JOHN DARLINGTON,  
2, COLEMAN STREET BUILDINGS, MOORGATE STREET, LONDON.

## THE "CRANSTON" ROCK DRILL.

J. G. CRANSTON begs to announce that he is now prepared to supply the above machine.  
The "CRANSTON" ROCK DRILL is already in successful operation in several Mines in the North of England.

STEAM BOILERS, AIR COMPRESSORS, and all other MINING MACHINERY supplied.

For prices, estimates, and other particulars, apply to—

J. G. CRANSTON, ENGINEER, 22, GREY STREET,  
NEWCASTLE-ON-TYNE.

## MINING MACHINERY AND TOOLS.

### THE TUCKINGMILL FOUNDRY COMPANY,

85, GRACECHURCH STREET, LONDON, E.C. WORKS: TUCKINGMILL.

MANUFACTURERS of every description of MINING MACHINERY,  
TOOLS, MILLWORK, PUMPING, WINDING, & STAMPING ENGINES.

SOLE MAKERS OF

WORLASE'S PATENT ORE-DRESSING MACHINES AND PULVERISERS.

PRICE LISTS CAN BE HAD ON APPLICATION, AND  
SPECIAL QUOTATIONS WILL BE GIVEN UPON INDENTS AND SPECIFICATIONS.

TUCKINGMILL FOUNDRY AND ROSEWORTHY HAMMER MILLS,

TUCKINGMILL, CORNWALL, AND 85, GRACECHURCH STREET, LONDON, E.C.

## MACHINERY FOR DRAINING, WINDING, AND PIT VENTILATION.

PUMPS, WAGONS, AND SMALL VENTILATORS FOR HAND USE.

MACHINERY DRIVEN BY COMPRESSED AIR,  
FOR UNDERGROUND DRAINING, WINDING, HOILING, AND ROCK-DRILLING PURPOSES.

MACHINERY FOR COAL-SORTING, LOADING, AND DRESSING, AND  
ALL PLANT FOR COKE-MAKING.

COMPLETE DRESSING PLANTS FOR ORES,  
As also SINGLE MACHINES for this purpose.

MACHINERY FOR PUDDLING-WORKS, IRON, ZINC, ETC.

ROLLING MILLS are furnished as a speciality since 1857, by the

Humboldt Engine-works, in Kalk, near Deutz-on-the-Rhine.

N.B.—SINGLE MACHINES AND APPARATUS TO PRICES-CURRENT ARE ALWAYS KEPT IN STOCK.

### CHARLES PRICE AND CO.'S PATENT RANGOON ENGINE OIL.



THIS OIL is suitable to every kind of Machinery; it is used almost exclusively in Her Majesty's Dockyards and Fleet, and by the War Office and East India Government; as well as by the Royal Mail Steam Packet Co., Pacific Steam Navigation Co., P. and O. Co., Cunard Co., and by most of the other important Royal Mail Steam Fleets in the kingdom. It is also extensively employed on the various railways, and by many of the leading engineering and manufacturing firms at home and abroad.

"I hereby certify that the Rangoon Engine Oil, manufactured by Messrs. Chas. Price and Co., is free from any material which can produce corrosion of the metal work of machinery. It is calculated, indeed, to protect metallic surfaces from oxidation, and, from its peculiar character, is not liable to lead to spontaneous combustion of cotton waste or any similar material which might become imbued with it, as is the case with Rape, Gallipoli, and Olive Oils. The lubricating power of this oil is equal to Sperm or Lard Oil."

T. W. KEATES, F.C.S., &c., &c., Consulting Chemist to the Board of Works

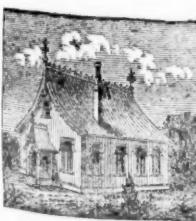
Extract from Mr. BAXTER'S Speech in the House of Commons, May 31st, 1870:—

Chas. Price and Co.'s Rangoon Oil—"a vastly superior article" (speaking of Gallipoli Oil at £72 per ton)—"was obtained for from £40 to £45 per ton." Every parcel of the Oil sent from the Works bears the Trade Mark of the Firm, and as many spurious imitations of the Rangoon Engine Oil are sold purchasers are requested to observe that none is genuine which does not bear this mark.

Oil, Tallow, and Colour Merchants, Seed Crushers, Turpentine Distillers, &c.

London: CASTLE BAYNARD, UPPER THAMES STREET, & MILLWALL, POPLAR.—Works: ERITH, KENT.

## IRON BUILDINGS, IRON ROOFINGS, &c.



ISAAC DIXON,

HATTON GARDEN, LIVERPOOL.  
MANUFACTURERS of IRON BUILDINGS of every description, including WORKMEN'S  
COTTAGES, STORES, WAREHOUSES, WORKSHOPS, &c., &c.  
Also, GALVANISED CORRUGATED IRON ROOFING, for MINING, COLLIERY,  
RAILWAY, and GENERAL PURPOSES.  
WORKMEN'S COTTAGES erected in blocks at very low prices.  
WROUGHT IRON TANKS.

I. D.'s IRON HOUSES and IRON ROOFS are ECONOMICAL, DURABLE, QUICKLY ERECTED,  
and REMOVABLE WITHOUT INJURY.

DRAWINGS AND ESTIMATES ON APPLICATION

ENGINEERS' TOOLS, LATHES, DRILLING MACHINES, LIFTING JACKS,  
HOISTING CRABS, HORIZONTAL STEAM ENGINES, &c., IN STOCK.

W. H. PEARSON, 50, ANN STREET, BIRMINGHAM.



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on application.

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## THE MINING SHARE LIST.

## BRITISH DIVIDEND MINES.

Shares.	Mines.	Paid.	Last Pr.	Clos. Pr.	Total divs.	Per share.	Last paid
1500 Alderley Edge, c, Cheshire*	10 0 0	...	...	12 1 8	0 5 0	Apr. 1874	
20000 Alt-y-Crib, t, Talbont	2 0 0	...	...	0 6 6	0 6 6	Feb. 1873	
30000 Barnpylede, c, s, m., Devon*	1 0 0	...	5 1/2	5 1/2	5 1/2	5 1/2	Feb. 1873
5500 Blaen Caerl, s, Cardigan*	10 0 0	...	...	0 10 9	0 10 9	—	—
13000 Boscastle Downs, t, c, St. Just*	3 0 0	...	...	0 5 6	0 2 0	Oct. 1871	
20000 Botallack, t, c, St. Just	115 5 0	50	40 50	619 15 0	5 0 0	Aug. 1873	
500 Bronfloyd, t, c, (23000 Deb. B. 8 per cent.)	100 0 0	...	...	110 0 0	2 0 0	Jan. 1872	
4000 Brookwood, c, Buckfastleigh	1 16 0	—	—	2 14 6	0 6 6	Nov. 1873	
3348 Cargill, s, Newlyn	5 0 5	2 1/2	1 1/2 2	4 16 3	0 12 6	Oct. 1872	
6400 Cashwell, t, Cumberlant*	2 10 0	—	—	1 4 0	0 4 0	Aug. 1874	
7500 Castle-an-Dinas, t, St. Columb*	2 0 0	—	—	0 10 0	0 2 0	July 1873	
1000 Corn Brea, c, t, Illogan	35 0 0	75	65 70	308 0 0	1 0 0	Feb. 1874	
6000 Cith, & Jane, t, Penrhynedraeth	5 0 0	—	—	0 7 6	0 7 6	June 1873	
2450 Cook's Kitchen, t, Illogan	20 4 9	—	10 1/2	9 9 1/2	11 17 0	7 6	Jan. 1873
10240 Devon Gt. Consols, c, Tavistock*	0 12 0	—	—	116 10 0	0 12 0	May 1872	
4296 Dolcoath, t, c, Camborne	10 14 10	50	45 47 1/2	104 4 2	0 12 6	Jan. 1874	
16000 East Baleswielden, t, Sancroft*	1 0 0	—	—	0 2 11	0 0 5	Feb. 1874	
6144 East Cardon, t, St. Cleer	2 14 8	1	3 1/2 1	14 19 0	0 2 0	Oct. 1872	
300 East Darren, t, Cardiganshire	32 0 0	—	222 10 0	1 0 0	May 1873		
4496 East Pool, t, c, Illogan	0 9 9	11	10 10 1/2	13 11 3	0 2 6	May 1873	
5000 Exmouth, t, c, Christow	0 7 6	—	—	0 1 0	0 1 0	May 1873	
2800 Foxdale, t, Isle of Man*	25 0 0	—	—	80 15 0	0 10 0	Sept. 1872	
40000 Glasgow Carr., t, Isle of Man*	1 0 0	1	7 1/2 1	4 10 0	0 1 0	Sept. 1873	
15000 Great Leyland, t, Cardigan*	0 6 0	12 1/2	11 1/2 12	16 17 0	0 6 0	Apr. 1874	
25000 Great West Van, t, Cardigan*	2 0 0	—	—	0 1 0	0 1 0	Sept. 1872	
5808 Great Wheat Vor, t, c, Helston	40 15 0	—	5 1/2 5 1/2	15 19 6	0 2 6	June 1872	
6490 Great Hurth, t, Durham*	0 6 0	—	—	1 8 0	0 4 0	May 1874	
1024 Herdfoot, t, near Liskeard*	8 10 0	—	2 1/2 4 1/2	62 5 0	0 15 0	Oct. 1872	
18000 Hindon Downs, c, Calstock* (1 £ sh.)	—	1/2	1/2 1/2	4 3 0	0 5 0	Dec. 1872	
25000 Killaloe, t, Tipperary	1 0 0	—	—	3 11 0	0 6 0	Mar. 1873	
400 Lisburne, t, Cardiganshire	18 15 0	—	—	563 10 0	1 0 0	May 1874	
5120 Lovell, t, Wendron	0 10 0	—	—	0 17 6	0 1 6	Jan. 1874	
6000 Minera Mining Co., t, Wrexham*	5 0 0	25	20 25	63 11 8	0 2 0	May 1874	
30000 Mining Co. of Ireland, c, t, * <sup>1</sup>	7 0 0	6 1/2	5 1/2 6 1/2	8 0 8	0 3 6	July 1872	
12000 North Hendre, t, Wales	2 10 0	—	—	0 15 0	0 2 6	June 1874	
2000 North Levant, t, c, St. Just	11 9 6	5	4 5	4 13 0	0 12 0	Sept. 1873	
7000 Old Treburratt, *s, t, ordinary shares	1 0 0	—	—	0 9 0	0 9 0	Feb. 1874	
9000 Old Treburratt, *s, t, (10 per cent. pref.)	0 10 0	—	—	0 10 1/2	0 10 1/2	Feb. 1874	
5694 Ped-an-drea, t, Redruth	9 2 0	—	—	0 5 0	0 5 0	Nov. 1871	
9000 Penhalls, t, St. Agnes	3 0 0	2 1/2	2 2 1/2	3 3 0	0 2 0	Jan. 1874	
6000 Penhalls, t, c, Gwennap	2 0 0	—	—	0 1 0	0 1 0	Nov. 1872	
6000 Phoenix, t, c, Linkinhorne	4 13 4	3 1/2	3 3 1/2	39 19 10	0 4 0	Nov. 1872	
1772 Polberro, t, St. Agnes	15 0 0	—	—	12 16 0	0 5 0	July 1874	
2000 Prince Patrick, *s, t, Holywell	1 0 0	—	—	0 7 0	0 2 0	July 1874	
1120 Providence, t, Lelant (last call Mar. '74)	3 1/2	3 1/2	3 1/2 3 1/2	104 12 6	0 10 0	Sept. 1872	
2000 Roman Gravels, t, Salop*	7 10 0	—	16 1/2 15 1/2 16 1/2	3 13 6	0 8 6	Apr. 1874	
10000 Shelton, t, St. Austell	1 0 0	—	—	0 1 0	0 1 0	Feb. 1872	
6000 Slimford Dressing, t, Calstock*	—	—	—	0 1 1	0 1 1	Sept. 1872	
512 South Cardon, t, St. Cleer	1 5 0	70	60 65	713 0 0	1 0 0	Apr. 1874	
5000 South Carn Brea, t, Illogan	1 17 6	3 1/2	3 1/2 3 1/2	10 10 0	0 2 6	July 1872	
6000 South Darren, t, Cardigan*	3 6 6	—	—	1 1 6	0 1 6	Nov. 1870	
8771 St. Just Annulmated, t, * <sup>1</sup>	3 10 0	—	—	0 9 0	0 4 0	Nov. 1871	
12000 Tankerville, t, Salop*	6 0 0	9 1/2	8 1/2 9	3 8 0	0 6 0	Feb. 1873	
30000 Terras, t, St. Austell*	1 0 0	—	—	0 3 0	0 1 6	Oct. 1872	
6000 Timrof, t, St. Austell	9 0 0	34	32 34	47 3 6	0 5 0	May 1874	
4000 Trumpet Consols, t, Helston	6 5 0	2	9 11 0	0 10 0	Nov. 1872		
15000 Van, t, Llandilo	4 5 0	28	25 30	12 9 6	0 12 6	April 1874	
30000 W. Chiverton, t, Perranzabuloe*	10 0 0	—	2 1/2 2	62 10 0	0 5 0	June 1873	
1048 West Wheal Frances, t, Illogan	27 3 9	15	12 1/2 13 1/2	3 12 6	0 5 0	Oct. 1872	
512 West Wheal Frances, t, Illogan	5 2 6	27 1/2	25 27 1/2	638 10 0	1 10 0	Aug. 1872	
4295 Wheal Kitty, t, St. Agnes	4 6 6	9	8 1/2 9	11 14 6	0 3 0	May 1874	
896 Wheal Margaret, t, U. Y. Lelant	15 17 6	1/2	8 2 3	20 10 0	0 10 0	May 1872	
10000 Wheal Mary, t, St. Dennis	5 0 0	—	—	0 1 0	0 1 0	Jan. 1873	
80 Wheal Owles, t, St. Just	70 0 0	140	120 130	522 10 0	0 4 0	Aug. 1872	
12000 Wheal Russell, t, Tavistock	1 0 0	—	—	0 2 9	0 0 9	Mar. 1871	
15000 Wheal Tregoss, t, Roche	1 0 0	—	—	0 1 0	0 1 0	Jan. 1873	
10000 Wheal Whisper, t, c, Warleggan*	1 0 0	—	—	0 1 6	0 0 6	May 1873	
25000 Wicklow, t, c, t, Wicklow	2 10 0	—	3 1/2 3 1/2 3 1/2	52 9 0	0 2 6	Mar. 1872	

## FOREIGN DIVIDEND MINES.

Shares.	Mines.	Paid.	Last Pr.	Clos. Pr.	Total divs.	Per share.	Last call.
35500 Alamillos, t, Spain*	2 0 0	—	2 1/2 2	1 3 9	0 2 0	Mar. 1874	
30000 Almada and Trito Consol., t*	1 0 0	—	3 1/2 3	0 4 3	0 1 0	May 1873	
20000 Australian, c, South Australia*	7 7 6	1/2	13 1/2 13 1/2	0 11 6	0 2 0	July 1873	
10000 Battle Mountain, *c, (6240 part pd.)	5 0 0	—	—	0 10 0	0 10 0	Nov. 1872	
15000 Birdseye Creek, g, California*	4 0 0	—	3 1/2 3 1/2	0 14 0	0 2 6	June 1874	
6000 Bensberg, t, Germany*	10 0 0	—	—	0 17 4	0 8 0	July 1873	
12320 Burren, g, S. Australia	5 0 0	—	56 0	0 10 0	0 10 0	Oct. 1872	
20000 Cape Copper Mining, *s, t, S. Africa	7 0 0	20 1/2 pd.	28 1/2 29 1/2	16 15 0	1 0 0	June 1874	
40000 Cedar Creek, g, California*	5 0 0	—	2 1/2 2	0 5 0	0 2 6	June 1874	
30000 Central American Association*	10 0 0	—	5 1/2 5 1/2	0 6 0	0 1 0	July 1869	
5711 St. Just Annulmated, t, * <sup>1</sup>	3 10 0	—	—	0 16 0	0 4 0	Sept. 1873	
20000 Colorado Terrible, s, t, Colorado*	10 0 0	—	3 1/2 3 1/2	0 8 0	0 2 0	Oct. 1872	
6162 Don Pedro North del Rey*	16 0 0	—	3 1/2 3 1/2	2 5 0	0 2 0	Mar. 1872	
25000 Eberhardt and Aurora, s, Nevada*	10 0 0	—	3 1/2 3 1/2	1 0 0	0 1 0	July 1871	
2352 Eldorado, g, Nova Scotia*	10 0 0	—	—	2 5 0	0 15 0	June 1873	
6000 Emma, g, Utah (25,000 fully pd.)</							